

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

LEISTAD Geirr I.
Thin Film Electronics ASA
P.O.Box 1872 Vika
N-0124 Oslo
Norway

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference Opti41PCT	Date of mailing (day/month/year) 18-07-2000
International application No. PCT/N000/00098	International filing date (day/month/year) 21-03-2000
Applicant FileFlow AS et al	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.
 Filing of **amendments and statement under Article 19:**
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? To the International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see notes on the accompanying sheet.
2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
☐ no decision has been made yet on the protest: the applicant will be notified as soon as a decision is made.
4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

 Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

 Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/ Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer <div style="text-align: center; margin-top: 10px;"> </div> Telephone No. 08-782 25 00
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference Opti41PCT	FOR FURTHER ACTION	<small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>
International application No. PCT/NO 00/00098	International filing date (<i>day/month/year</i>) 21 March 2000	(Earliest) Priority Date (<i>day/month/year</i>) 22 March 1999
Applicant FileFlow AS et al.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.
☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ transcribed by this Authority.
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:

Figure No. 1

☐ as suggested by the applicant.
☒ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

☐ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 13/00, G06F 9/445, H04L 29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9844402 A1 (BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY), 8 October 1998 (08.10.98), page 2, line 23 - line 30; page 8, line 16 - page 11, line 2 --	1-16
X	Macweek, Volume 8, No N2, January 1994, Fraase M., "Compression pros deliver telecom with sitcomm 1.0", page 43 - page 44, See whole document --	1
A	US 5270805 A (SHINTARO ABE ET AL.), 14 December 1993 (14.12.93), See whole document --	1-16

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

29 June 2000

Date of mailing of the international search report

18-07-2000

Name and mailing address of the ISA:

Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Jesper Bergstrand/LR
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 00/00098

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p data-bbox="305 344 1133 411">US 5694546 A (RICHARD R. REISMAN), 2 December 1997 (02.12.97), See whole document</p> <p data-bbox="651 447 784 489">-- -----</p>	1-16

INTERNATIONAL SEARCH REPORT
Information on patent family members

02/12/99

International application No.
PCT/NO 00/00098

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9844402	A1	08/10/98	AU	6414098 A	22/10/98
				GB	9800808 D	00/00/00

US	5270805	A	14/12/93	DE	3789757 D,T	25/08/94
				EP	0269746 A,B	08/06/88
				JP	2103417 C	22/10/96
				JP	7108009 B	15/11/95
				JP	62269469 A	21/11/87
				US	4922349 A	01/05/90
				WO	8707107 A	19/11/87
				JP	2578414 B	05/02/97
				JP	63115455 A	20/05/88

US	5694546	A	02/12/97	WO	9533236 A	07/12/95

09/674969
21C1

TENT COOPERATION TREATY

2154

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

FEB -9 2001

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2111 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 16 November 2000 (16.11.00)	
International application No. PCT/NO00/00098	Applicant's or agent's file reference se0000581
International filing date (day/month/year) 21 March 2000 (21.03.00)	Priority date (day/month/year) 22 March 1999 (22.03.99)
Applicant FULDSETH, Arild et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
20 October 2000 (20.10.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
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PCT COOPERATION TREATY

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NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

LEISTAD, Geirr, I.
Thin Film Electronics ASA
P.O. Box 1872 Vika
N-0124 Oslo
NORVÈGE

Date of mailing (day/month/year) 19 April 2000 (19.04.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference Opti41PCT	International application No. PCT/NO00/00098

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

FILEFLOW AS (for all designated States except US)
FULDSETH, Arild et al (for US)

International filing date : 21 March 2000 (21.03.00)
Priority date(s) claimed : 22 March 1999 (22.03.99)
Date of receipt of the record copy
by the International Bureau : 04 April 2000 (04.04.00)
List of designated Offices :

AP : GH,GM,KE,LS,MW,SD,SL,SZ,TZ,UG,ZW
EA : AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
EP : AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE
OA : BF,BJ,CF,CG,CI,CM,GA,GN,GW,ML,MR,NE,SN,TD,TG
National : AE,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,DZ,EE,ES,FI,
GB,GD,GE,GH,HR,HU,ID,IL,IN,IS,JP,KE,KG,KP,KR,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,
MN,MW,MX,NO,NZ,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,US,UZ,VN,YU,ZA,
ZW

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase
☒ confirmation of precautionary designations
☐ requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer: Philippe Bécamel Telephone No. (41-22) 338.83.38
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INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is **20 MONTHS** from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, **30 MONTHS** from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. **It is the applicant's responsibility** to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity to furnish the priority document within a time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

LEISTAD, Geirr, I.
Thin Film Electronics ASA
P.O. Box 1872 Vika
N-0124 Oslo
NORVÈGE

Date of mailing (day/month/year)

28 September 2000 (28.09.00)

Applicant's or agent's file reference

~~se0000581~~

IMPORTANT NOTICE

International application No.

PCT/NO00/00098

International filing date (day/month/year)

21 March 2000 (21.03.00)

Priority date (day/month/year)

22 March 1999 (22.03.99)

Applicant

FILEFLOW AS et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU,DZ,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,
GE,GH,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,NO,
NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 28 September 2000 (28.09.00) under No. WO 00/57280

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

J. Zahra

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

LEISTAD, Geirr, I.
Thin Film Electronics ASA
P.O. Box 1872 Vika
N-0124 Oslo
NORVÈGE

Date of mailing (day/month/year) 19 April 2000 (19.04.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference Opti41PCT	
International application No. PCT/NO00/00098	International filing date (day/month/year) 21 March 2000 (21.03.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 22 March 1999 (22.03.99)
Applicant FILEFLOW AS et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
22 Marc 1999 (22.03.99)	19991371	NO	04 Apri 2000 (04.04.00)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Philippe Bécamel

Telephone No. (41-22) 338.83.38

003237099

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 22 AUG 2001

WIPO

PCT

Applicant's or agent's file reference Opti41PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NO00/00098	International filing date (day/month/year) 21/03/2000	Priority date (day/month/year) 22/03/1999
International Patent Classification (IPC) or national classification and IPC G06F13/00		
Applicant FILEFLOW AS ET AL.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 23 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 20/10/2000	Date of completion of this report 20.08.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Meis, M Telephone No. +49 89 2399 2505 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/NO00/00098

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-16 as received on 02/06/2001 with letter of 29/05/2001

Claims, No.:

1-16 with telefax of 03/07/2001

Drawings, sheets:

1/7-3/7,5/7,7/7 as published

4/7,6/7 as received on 11/04/2001 with letter of 06/04/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NO00/00098

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-16
	No:	Claims	
Inventive step (IS)	Yes:	Claims	4-10,13
	No:	Claims	1-3,11,12,14-16
Industrial applicability (IA)	Yes:	Claims	1-16
	No:	Claims	

2. Citations and explanations
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NO00/00098

SECTION I

1. The amendments filed with the telefax dated 03.07.2001 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned is the specific processing being carried out using software specified as "user application software", there being no basis in the application as filed for actually characterizing the specific processing as being carried out by a "user application" software.

For the purpose of examination, this specification has been ignored and the software has merely been regarded as (general) "software".

SECTION V

1. The application pertains to a method of transmission in a data communications network.
2. See the application, p. 1 - p. 3, l. 2 for a description of the prior art and its drawbacks, p. 3, l. 3 - 18 for the objects of the invention and cl. 1 and 3 and p. 3, l. 19 - p. 6, l. 26 for the invention.
3. Summary of disclosure of documents mentioned in search report:

WO-A1-9844402 (X), hereinafter referred to as D1 is the only relevant document - see par. 5.(a) below.

'Compression pros deliver telecom with sitcomm 1.0', 'FRAASE M.', 'MACWEEK', ", 8/2/00-01-1994, 43-44 (X) merely discloses a Mac communications program with automatic file compression capabilities for uploads and automatic file decompression and decoding capabilities at downloads.

US-A-5270805 (A): see the application, p. 2, l. 22 - 33.

US-A-5694546 (A) merely discloses software for effecting information transmission with a server in an unattended mode after initiation and automatically integrating received information.

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4. The subject-matter of independent cl. 1 and 3 is new (Art. 33(2) PCT with respect to the prior art following from the documents cited in the search report - see par. 3 above and, regarding document D1, par. 5.(a) below.
5. The subject-matter of cl. 1-3, 11, 12 and 14 - 16 does not imply an inventive step (Art. 33(3) PCT) for the following reasons:

(a) Cl. 1

Document D1 discloses (in the terms of the claim)

a method in the transmission in a data communications network (world wide web 2) of arbitrarily formatted files comprising one or more different data types, between a sender comprising a data-processing device (web server 1) connected to the data communications network,

- wherein the sender (web server 1) represents an information provider, and one or more receivers with respective data-processing devices (client computer 3) connected with the data communications network, wherein each receiver (client computer 3) represents a user,
- wherein files which shall be transmitted are stored in a database (filesystem) at the sender (web server 1) and which for the transmission that substantially takes place transparently for both sender (web server 1) and receiver (client computer 3), are downloaded (from the watermarking server - p. 18, l. 31 - p. 19, l. 2 and p. 11, l. 24 - p. 12, l. 1) to the data-processing device of the sender (web server 1), and

wherein the method is characterized by

- processing (receiver: decrypting) a file (requested file: e.g. p. 10, l. 13: a_graphic.gif) specifically for one user (for particular user whose request is granted by the sender in combination with e.g. a payment scheme, i.e. not for any user) with software (user: Java applet for decryption) for one user for one or more user applications (Java enabled web browser, such as Netscape Navigator (p. 6, l. 30) or Microsoft Explorer (p. 6, l. 29) (even known to understand its own specific, not fully compatible Java brand))

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under determined conditions (request made by client and granted by server),

- the processing (decryption) with said software taking place in the receiver's data-processing device after the file has been received (decryption by the Java applet) (**considering the option "or" in the three "and/or" options present in cl. 1, p. 16, l. 17 - 20 and using the last one only**), and
- performing the processing with said software (user: Java applet) which is stored in the following: the sender (Java applet: e.g. p. 10, l. 12: BTCBrowserApplet.class), and as required is transmitted (from the sender to the user (receiver)) before the processing to an actual processing location (data processing device of the user).

Regarding the processing by said software, D1, p. 16, l. 13 - 15 does disclose processing specific for one user in that the specific software (java applet A1) may include encryption and hashing keys specific to the user (client). D1 further discloses processing for one or more applications since the specific software (java applet) is downloaded for the Netscape or Microsoft Explorer web viewer application (java enabled viewer).

The claimed subject-matter differs from the disclosure of D1 as indicated in the following, which differences do not imply an inventive step:

- Cl. 1 mentions Internet as an example for the data communications network, which is obvious since World wide web communications mostly take place over the Internet.
- Cl. 1 requires transmission to take place through a dedicated server which is an obvious feature as it is usually provided by routers or gateways or firewalls which are dedicated to the transmission.

The subject-matter of cl. 1 thus does not imply an inventive step.

(b) Cl. 2, 11, 12 and 14

The additional features defined in cl. 2 lack an inventive step for the reasons

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previously stated in the first written opinion, section V.

(c) Cl. 3

The subject-matter of cl. 3 lacks an inventive step for the combined reasons for which the subject-matter of cl. 1 and cl. 2 lack an inventive step.

(d) Cl. 15 and 16

The features defined in cl. 15 is obviously provided by e.g. a firewall at the sender.

The features defined in cl. 16 obviously follows e.g. from log files commonly in use.

5. The subject-matter of cl. 4 - 10 and 13 implies an inventive step (Art. 33(3) PCT) with respect to the disclosure of document D1 because the particular features defined therein are not disclosed in document D1.
6. The claimed methods are industrially applicable in computer networks.

SECTION VIII

1. A lack of clarity (Art. 6 PCT) arises in the claims for the following reasons:
 - (a) It is still not clear what particular features of the claimed method are implied by specifying the server as "dedicated" and, particularly, what the term dedicated refers to. The method being a method in the transmission in a data communications network of arbitrarily formatted files, common network firewalls, routers or gateways may be considered as dedicated since they are for transmitting arbitrarily formatted files in a data communications network.
 - (b) In cl. 4 it is not clear what the resource address and access code are related to in the context of the claims.

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Methods in transmission of files in a data communications network

The invention concerns methods in transmission in a data communications network, particularly Internet, of arbitrarily formatted files comprising one or more different data types, between a sender comprising a data-processing
5 device connected to the data communications network, wherein the sender represents an information provider, and one or more receivers with respective data-processing devices connected with the data communications network, wherein each receiver represents a user, wherein transmission takes place via a dedicated server provided in or assigned to the data communications
10 network, wherein files which shall be transmitted are stored in a database at the sender or in a database accessible from the sender and which for the transmission that substantially takes place transparently for both sender and receiver, are downloaded to the data-processing device of the sender.

The need for fast, effective and safe transmission of files for application
15 purposes is rapidly increasing. Particularly this is the case in the media industry, where it is desirable with transmission of large files composed of different data types, including image information which is very capacity-demanding. Most of the information which is used in the media industry is present digitalized and transmitted in digital form and even
20 though this can take place via existing broadband communications networks, the transmission of source information representing large data volumes, typically several Gbytes, yet becomes an expensive and for the user time-demanding process. Beyond all it is hence desirable to save time and costs in the transmission as well as making the transmission process more
25 simple and efficient, something which will offer an end user great advantages compared with present file transmission systems. In a public data communications network such as Internet, the traffic has only been increasing all the time, something which makes the transmission of large data volumes and large files on Internet both time-consuming and
30 cost-demanding. For large data volumes or extensive documents it hence may be an alternative to make use of courier services or file transmission on dedicated ISDN lines. Even though such measures guarantee a safe transmission, they are yet linked with substantial costs and the use of courier services may in a large number of cases be unsuitable due to the time factor.

In connection with transmission of files data processing the files in connection with a transmission is well-known. Data processing of this kind can typically consist of various forms of compression coding in order to reduce the data volume which shall be transmitted, or measures in order to protect the data which are transmitted against copying. In international published patent publication WO98/44402 there is thus disclosed a method for copying protection of data which are downloaded from a server, typically via World Wide Web, to a client in order to be presented to a user. The transmitted and downloaded data are protected cryptographically by encryption and hashing. The processing to this end may then take place in a network server before transmission on e.g. the World Wide Web. Further there is in a paper by Michael Fraase, "Compression pros deliver telecom with SITcom 1.0: Aladdin app offers transparent connection and compression" (MacWEEK, vol. 8, no. 2, 10. January 1994, page 43(2)) disclosed a telecommunication software which automatically can compress files during transmission using the so-called "Stuffit" tool from Aladdin Systems Inc. The users can use this software which is called "SITcomm" for automatically converting files or folder hierarchies to "Stuffit" archives before uploading or for automatically expand the archives as they are downloaded. SITcomm can also use a so-called toolbox for implementing all connections, file transmissions and emulations.

From US patent no. 5 270 805 (Abe & al., assigned to Canon) there is additionally known a data-communication device which generate data as respectively character data and colour image data, these data being divided between respective block areas. The block area for the image data can further be divided into further block areas in correspondence with the image characteristics of the image data. In each case the data transmission takes place blockwise and by means of a conversion device it is determined whether a function is present in the receiver device and the transmitted data in the block areas are converted according to this. This may e.g. then imply that if the receiver has no possibilities of processing a colour image, the colour image data will be converted to data which can be processed by the receiver.

In many cases data is transmitted in files with a specific processing at the receiver in mind, e.g. for different applications, and advantageously a

processing of this kind which basically has no connection to the transmission process as such could take place in connection therewith.

The object of the present invention is thus to provide methods which make a combined transmission and a non-transmission-related processing of data in files on public communications networks, e.g. Internet more efficient.

It is particularly the object that a transmission of files with accompanying specific processing shall take place with regard to a possible transmission-specific processing of the files and see to that the transmission of files between a sender and one or more receivers with connected specific processing for a user and user-related applications is realized with fast and secure transactions between the parties.

It is also an object of the invention that large files shall be transmitted anywhere in the world and then by combining the transmission with a specific processing, without transmission and processing requiring unnecessary large data resources at the sender and receiver. The transmission and specific processing shall then take place substantially in transparency both for the sender and receiver, such that they can exploit their data resources for other tasks while the transmission itself takes place.

The above-mentioned objects and advantages are realized according to the invention with a method which is characterized by processing a file ^{specifically} with software specifically for one or more users and/or one or more applications under determined conditions, the specific processing ^{with user and/or application specific software} taking place consecutively in a data-processing device of the server during the transmission and/or consecutively in the data processing device of the receiver as the file is received and/or in the data processing device of the receiver after the file has been received, and performing the processing with software ^{specific} which is stored in one or more of the following: the sender, the server or the receiver, and as required is transmitted before or in phase with the processing to a an actual processing location.

The above-mentioned method comprises advantageously consecutive or approximately simultaneous and/or interfoliated realized steps for a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression procedure,

- b) dividing the compression-coded file in packets,
 c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
 d) providing the packets with receiver address, and
 5 e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, as well as a further step, for
 f) decoding the received file at the receiver according to the data compression procedure or procedures already used for the compression coding.
- 10 The above-mentioned objects and advantageous are additionally realized according to the invention with a method which comprises consecutive or approximately simultaneous and/or interfoliated realized steps for
 a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression
 15 procedure,
 b) dividing the compression-coded file in packets,
 c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
 d) providing the packets with receiver address, and
 20 e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, and as well as further steps for
 f) decoding the received file at the receiver according to the data-compression procedure or procedures already used for the compression coding, and
 25 g) additionally processing ^{with software specific} the file specifically for one or more users and/or for one or more applications under determined conditions, the specific ^{with said user and/or application-specific software} processing taking place consecutively in a data-processing device of the server during the transmission and/or consecutively in the data-processing device of the receiver as the file is received and/or in the data-processing
 30 device of the receiver after the file has been received, and performing the specific processing ^{said specific processing} with software which is stored in one or more of the following: the sender, the server or the receiver, and ~~which~~ as required is transmitted before or in phase with the processing to an actual processing location.
- 35 According to the invention it is advantageous that the sender simultaneously with the initialization of the transmission ^{of} during or after the transmission

to the server sending a message to the receiver with a resource address and an access code and receiving a confirmation from the server when the latter has received the file and the confirmation from the receiver when the latter has received the file and downloaded it to its data-processing device.

- 5 Where the arbitrarily formatted file comprises one or more of the following data types, viz. image data, alphanumeric data, graphics data and fonts, it is according to the invention advantageous using the proprietary data compression procedure for compressing image data, and using the general loss-free compression procedure substantially for compression of
10 alphanumeric data, graphics data and fonts.

According to the invention is advantageous storing the software for data compression coding and decoding in the server and downloading said software automatically respectively to the data-processing device of the sender for coding the file when the transmission is initialized and to the data
15 processing-device of the receiver for decoding the file when it is received.

In that connection packet-division preferably takes place dependent on the data type, such that each packet comprises a determined data type.

- According to the invention it is advantageous that the specific processing takes place in the server after a preceding decoding of the file in the server
20 by means of the software for the data compression coding, the software for the specific processing either being stored at the sender and/or at the receiver and being transmitted to the data-processing device of the server when the specific processing shall take place, or beforehand stored in the data-processing device of the server, and after the specific processing again
25 compression-coding the file with software stored in the server for transmission to the receiver, the server on the basis of the receiver address checking whether processing conditions are present.

- In that connection are preferably the processing conditions assigned to a determined receiver address being stored in the server together with software
30 for the processing and being accessed by the server on the basis of the receiver address, and preferably the specific processing is then performed on one or more determined data types such that only packets comprising the determined data type are decoded before the processing and coded anew after the processing has terminated.

According to the invention it is advantageous that the decoding of the file at the receiver takes place consecutively as the file is received. In that connection the specific processing preferably takes place consecutively in the data-processing device of the receiver before and/or after the decoding of the file which is received, the software for the processing either being stored at the receiver and/or in the sender and/or in the server and being transmitted to the data-processing device of the receiver when processing shall take place or before beforehand being stored in the data-processing device of the receiver.

It can according to the invention also be advantageous storing the file as it is received in the data processing-device of the receiver, and then decoding the file by the receiver at a later suitably selected time. In that connection the specific processing of the stored file can then preferably take place in the data-processing device of the receiver before and/or after the decoding of the file, the software for the processing either being stored at the sender and/or in the server and transmitted to the data-processing device of the receiver when processing shall take place or beforehand entered in the data-processing device of the receiver.

According to the invention the dedicated server is advantageously implemented on a general network server.

According to the invention are user names, receiver addresses, files and the given processing conditions assigned to user names or receiver addresses preferably stored temporarily or permanently in a data base provided in the server.

The invention shall now be explained in more detail in connection with exemplary embodiments and with reference to the accompanying drawing, wherein

fig. 1 shows a system layout for data transmission between a sender and several receivers, e.g. in a public data communications network such as Internet,

fig. 2 the flow diagram for a preferred embodiment of the method according to the invention,

fig. 3. the flow diagram for a first variant of the embodiment in fig. 2, and

fig. 4. the flow diagram for a second variant of the embodiment in fig. 2.

Fig. 1 shows the system layout for file transmission in a public data communications network, e.g. Internet, such as known in the art. A number of information providers can be connected with the system and an information provider is here shown represented by the sender 1. The sender 1 comprises a data-processing device or computer 2 which well may be a personal computer and a database 3 connected with computer 2. In addition the sender 1 can optionally also communicate with one or more external databases 4. These external databases 4 can be connected with a sender in a local network and stored on local data-processing devices which well may be the information provider's own. Alternatively the external databases 4 can be stored at other information providers and then e.g. be accessed by the sender 1 via the public data communications network. The sender 1 is connected with and has at its disposal a dedicated server 5 which can be a free-standing data-processing device with a computer 6 and a database 7 connected thereto. The server 5 can e.g. be accessed via local network and or the public data communications network and comprises in any case a not shown interface for such a public data communications network which e.g. then may be Internet. Alternatively the server 5 could also be implemented on the sender's own network server and the required data processing takes place on the sender's own computer. As a dedicated server in a data communications network the server 5 can be a shared resource for several information providers and consequently be accessed from several senders 1. In regard of software the server is basically realized with two modules, one for reception of files and one for transmission of files to receivers. Additionally the server can comprise several modules, e.g. for processing of data, message switching etc. The server's software will normally be stored in the database 7 assigned to the server, but this database can in its turn be a shared resource for several information providers or form a part of the sender's own database 3.

The server 5 can via the public data communications network communicate with arbitrary number of receivers $8_1, 8_2, \dots, 8_k, \dots, 8_n$. This communication then takes place on the public available data communications network, e.g. Internet, via lines 9. The receivers are users of information and receive on request information transmitted from the information provider or the sender 1 in the form of files. The received files can after downloading to the receiver 8 be processed on a data-processing device at the receiver, stored in a local

data memory at the receiver and be utilized for a user-specific application at a time appropriate for the user.

It is a part of the object of the invention that the file transmission proper and all the operations which in this connection as executed by the server 5 take place substantially transparent to the sender as well as the receivers 8. This implies in practice that at least while the file transmission takes place, the data-processing devices of both the sender and the receivers or computer could be used for other tasks, as the file transmission operation as such shall not in any considerable degree shall load the mentioned computers.

10 A preferred embodiment according to the invention shall now be discussed with reference to fig. 2, which renders a flow diagram showing the separate steps of the method. In this connection it shall be remarked that all references in the flow diagram to specific processing points to a user-specific or application-specific processing which has no consequences for the file transmission as such.

The embodiment of the method according to the invention is initialized at the start step 100 on the sender's 1 computer 2 as shown in fig. 2. With the sender it is to be understood an information provider which serves a number of clients which are the receivers or users of the information. In step 101 the files which shall be transmitted are specified and fetched from the database 3 of the sender 1 or from databases 4 which can be accessed by the sender. These databases can be connected with the sender 1 in a local network or be accessed via the public data communications network which in the following will be supposed to be identical with Internet and denoted as such. It is to be understood that the file which shall be transmitted may consist of different types of source information which may well be located in several databases. Before the transmission all source information is in such a case collected in the file to be transmitted. The sender 1 also fetches receiver addresses, i.e. addresses to clients or users, preferably stored in the sender's own database 3. It is to be understood that files and documents collected may be formatted arbitrarily. They may e.g. be compression-coded beforehand with some appropriate compression procedure such as MPEG for video or films or JPEG for stills. The files can consist of a number of different data types as they do not need to consist of image information which in this case shall be understood as video images, film images or still images, but may in addition

also comprise usual alphanumeric information, graphics information and possibly fonts. The latter will be relevant where alphanumeric and graphics information in the files at the users will be applied in media enterprises, e.g. the graphic industries. In step 102 the collected files now are

5 compression-coded, as either a proprietary compression procedure or a particular loss-free data compression procedure is used. The proprietary data compression procedure can be a particular compression procedure for image information, possibly with an adaptation for stills or video. This proprietary compression procedure is developed by Fast Search & Transfer ASA, which

10 has assigned the rights of use to the applicant. It will be relevant using it for those parts of the file which consist of image information. Other data types in the collected files as e.g. alphanumeric and graphics information can be compressed with a general loss-free procedure, such loss-free compression procedures being well-known to persons skilled in the art and hence not

15 discussed in further details herein. As the collected file or parts thereof can be an arbitrarily formatted file, the file or parts thereof can as mentioned already be subjected to a compression procedure. A repeated data compression of image information in the form of video images which already have been subjected to a compression of the MPEG type will with the

20 applicant's proprietary compression procedure which has a higher compression factor than MPEG be further compressed. In other parts of the file which e.g. beforehand may have been subjected to a loss-free compression procedure, the general loss-free compression need not effect a further compression of these parts. In any case the compression coding in

25 step 102 executed on the sender's own computer 2 which thereafter divides the collected compression-coded files in packets, such that each separate packet preferably contains a determined data type and at the sender has been subjected to a particular form of compression coding.

It is to be understood that the software used in the compression coding can be

30 stored on the sender's own data-processing device, but preferably it is stored in the server 5 and will, when the file transmission is initiated, automatically be transmitted to the sender 1 from the server 5.

In step 104 the packet-divided compression-coded file is now transmitted from the sender's 1 computer 2 to a server 5 which well may be the sender's

35 own network server or a dedicated server and connected with a server via e.g. a dedicated line, a local network or a public data communications network

such as Internet. The sender 1 will now in step 5 inquire the server 5 whether the compression-coded file has been received and if the answer is NO the file transmission will continue until this is the case. Is the answer is YES and the compression-coded file is completely received on the server 5, the file is now
5 provided with receiver address in the server's 5 computer 6 in step 106. The receiver address will e.g. be downloaded from the sender 1 to the server 5 at the start of the transmission. The receiver address may, however, also be an identification code and the intention is in any case that the receiver address or the identification codes are used in a step 107 implemented on the server
10 5, wherein a decision is taken whether the compression-coded files shall be subjected to a specific processing in the server or not. If the answer is NO, a confirmation is sent in step 111 that the file has been received on the server 5 and simultaneously a confirmation is sent to the receiver 8, the confirmation comprising a message with a resource address (URL) and an access code, the
15 latter e.g. a password for the user. In the present case the resource address will, of course, be the address of the server.

The decision in step 107 takes place on the basis of the receiver address or the identification code, e.g. with a table which for the relevant receiver address or identification code provides the server with the necessary
20 processing instructions. If the answer in step 107 hence is YES, the file is decoded in step 108 and thereafter subjected to the required data processing, i.e. a specific processing in step 109. This processing can be user specific or application-specific and takes place with software which is stored in the data base 7 of the server 5 or which is transmitted to the database of the server,
25 either on the basis of the receiver addresses when the file transmission starts or beforehand has been stored in the database 7 of the server 5 by the separate receiver. In this connection it is to be understood that step 111 very well may be realized in another location in the transmission process such that the confirmation can effect the transmission of the required software for the
30 processing from either the sender or receiver before the decision in step 107 concerning the processing is made. The processing which takes place in step 109 can be user-specific or application-specific, i.e. the file is processed user-specifically for one or more users or receivers or application-specifically for two or more users, such that the file is subjected
35 to the same processing for one and the same application or one and the same application is implemented at more than one user. The processing will as a rule take place by packet switching, e.g. be executed on packets which

comprises image information and it is, of course, then evident that not all packets in the file need to be decoded before the processing. A typical example of processing which is performed can be the processing of image information with the intention of providing the image information with an optimum colour profile for the relevant user's applications. An example of a colour profile of this kind is the so-called ICC standard which stands for International Color Consortium which was established in 1993 by 8 industrial enterprises in order to provide a standardized architecture and standardized components for colour handling in image information. Digitalized colour image data will both before and after the compression coding typically be present as an RGB code. After image information has been decoded for processing, the RGB format is converted to a CMYK colour format with the use of the ICC colour profile. For the sake of that, this could also be done on the sender's computer 2, but preferably step 109 is realized as shown on the server's computer 6. In this connection the ICC profile can be transmitted automatically to the server 5, e.g. from the sender 1 or from a receiver 8, but may also be prestored in the server. The ICC profile is in any case implemented in each case when the image information format after the decoding is converted from the RGB format to the CMYK colour format.

After completed processing in the server 5 the file is again compression coded in step 110 and a confirmation is submitted as mentioned above in step 111 in the form of a message to the sender and a confirmation in the form of a message to the receiver 8. Whether the confirmation of the receiver in step 111 as mentioned is submitted at an early stage in the process or immediately after step 107 or step 110, the server 5 in step 112 will receive a transmission request from one or more receivers 8 and if the server in step 112 does not find such a transmission request for a receiver, an already compression-coded or processed file for the receiver can in step 104 either be stored in the server 5 for later transmission to the receiver or be deleted. If the server 5 in step 112 on the contrary finds that a transmission request from one or more receivers is present, the server 5 transmits the compression-coded and in case also processed files to the respective receivers 8 on the basis of the receiver addresses, as each packet is addressed and transmitted consecutively after step 107 as the packets are received on the server 5 or consecutively following step 110, in any case on the basis of the received transmission request such this is present at step 112. The transmission from the server 5 to the receiver 8 takes place in step 114 and the file is downloaded

consecutively in step 115. In step 116 a decision is made whether the file is downloaded, and if the answer is NO, the downloading of a compression-coded and possibly processed file in step 115 continues until the downloading is completed and confirmed in step 116 with YES. Then the receiver 8 in step 117 sends a confirmation in the form of a message to the sender 1 that the file has been downloaded. After the file has been received and downloaded to the receiver's computer, the latter decodes the file in step 118.

Advantageously a specific processing also may take place on the receiver's 8 own computer and a decision about a processing of this kind is taken in step 119. If the answer is YES, the downloaded file is processed in step 120 and it is default that the processing can comprise a number of separate processing steps and be executed on different data types. Where the user or receiver 8 represents media industry or graphic industry, it may of course be topical to implement a suitable colour profile in connection with conversion from one colour format to another. There is also nothing against a file which already has been subjected to a processing on the server 5 in step 109 or after the decoding at the receiver 8 in step 118 being processed further and user-specifically by the receiver 8 in step 120 such this alternative is evident from fig. 2. Further can both the user-specific and application-specific processing wholly take place on the receiver's own computer and without a preceding specific processing in step 109 in the server. This is shown in fig. 3 which corresponds to the case where the answer in step 107 in fig. 2 always is NO. Consequently step 107 and the loop with the steps 108-110 have been deleted from fig. 3 for clarity's sake, as specific processing now only takes place in step 120. If the answer in step 119 is NO, the transmission is finally complete and the entire process terminates in step 121 as shown both in fig. 2 and fig. 3.

It is also possible that certain forms of processing can be performed in the server 5 on a compression-coded file without a preceding decoding taking place. This alternative will, of course be expressed by a processing condition, but is not shown in fig. 2. In practice this implies that steps 108 and 110 are deleted.

Correspondingly can also optionally a specific processing of compression-coded files take place in the receiver 8, without a preceding

decoding. This is shown in fig. 4 which is similar to fig. 3, but comprises an additional decision step 117a and a loop with an additional processing step 120. Processing on the basis of a decision in step 117 a will take place in step 117b, whereafter the file is decoded in step 118 and optionally after a
5 decision in step 119, once again is subjected to a specific processing in step 120.

According to the invention the separate steps in the method are realized consecutively and approximately simultaneously such a step does not need to be terminated before the next has begun, as the separate operational steps in
10 practice are performed by packet-switching. This implies in other words that the first packets in the file already can be downloaded at the receiver 8, while compression coding and packing of the last parts of the files still take place in the sender 1. Further it shall be understood that the succession of the
15 separate steps may be different than shown in the flow chart in fig. 2, which only schematically renders a preferred embodiment. In practice the operational steps can be interfoliated, i.e. that for instance decoding and downloading of not-processed packets in step 115 in time may well precede the processing in step 109. Also the steps for transmission of confirmations between the acting parties, i.e. the sender 1, the server 5 and the receiver 8
20 can be located differently in the sequence of steps. A confirmation to receiver 8 with resource address, file reference and password can for instance take place already before the transmission starts and then of course from the sender 1 to the receiver 8. Correspondingly the server 5 can confirm the transmission with a message to the sender 1 immediately after in step 107.
25 Yet it is regarded as most suitable that the confirmations are given in the form of messages from the server to respectively sender and receiver after a possible processing in the server has been terminated. Further, a confirmation in step 111 will usually cause the server 5 to receive a transmission request from the receiver 8 at step 112, but a transmission request may well be
30 entered beforehand on the basis of an already submitted message from the sender 1.

It is, of course, no requirement that the decoding of the file in step 118 takes place consecutively as the file is downloaded. The receiver 8 can choose to
35 download the file without decoding and thereafter store the compression-coded and possibly already processed file on his own computer for a shorter or longer time period with regard to a later application. As the

file already is compression-coded the storage will require little space. The decoding of stored file can then take place at a later time and be combined with a possible user-specific or application-specific processing on the receiver's own computer. Neither is it, of course, anything against
5 performing the processing or parts thereof on the stored compression-coded file, i.e. before the decoding takes place, but in most cases the file will be processed in connection with the decoding and then as this takes place, e.g. for an application requirement which shall be met on a suitable time for the receiver or user after the file has been transmitted or stored on the
10 data-processing device of the user.

The method in file transmission according to the present invention also provides great flexibility with regard to storage and downloading of the required software for e.g. processing. Suitably may as mentioned the software for the compression coding for instance be stored at the server 5 and
15 automatically be downloaded to the sender 1 when the transmission is initialized, but it can of course also be prestored at the sender. Correspondingly can software for the specific processing be stored at the sender 1 as well as the server 5 and/or the receiver 8 and transmission of software of this kind be implemented automatically when e.g. a decision on
20 processing is taken irrespective of whether it takes place at the sender, server or receiver.

The methods in transmission of files according to the present invention will be well suited for file transmission of text and images on Internet with applications in the media industry in regard. By systematically using the
25 compression procedure based on respectively the applicant's own data compression technology for image information and commonly known loss-free compression procedures for text and fonts, a file transmission with a particular large capacity is obtained while the transmission costs are reduced. The applicant's own data compression technology is many times as
30 effective as e.g. the known standards such as JPEG and MPEG with regard to compression speed, while the quality of the decoded information in regard of e.g. colour rendition and resolution is far better. For instance can large image files in the present method be compressed by more than 98% and transmitted via Internet anywhere in the world without causing an appreciably reduced
35 image quality. The transmission additionally takes place very fast – as a rule

the confirmation that a downloading has taken place will appear just as fast as it shall take to write the corresponding data to a common CD-ROM.

As mentioned, the methods according to the present invention shall be particularly well suited in the media industry. As more and more tasks in the media industry apply digitally-based information, this requires an effective file transmission. Simultaneously the files can in connection with the transmission be subjected to a specific processing and this processing shall, regardless of where it takes place, similar to other procedures during the transmission substantially take place in transparency both to sender and receiver. In the present method the demand for lines with high bandwidth is eliminated by far, as the specific processing does not affect the bandwidth requirement in the transmission, and owing to the use of e.g. the above-stated compression factor, it will be possible to obtain a virtual processing rate of the magnitude 10 Gbit/h on an ordinary ISDN line. If a transmission line with the fixed band-width of 2Mbit/s is used, it will with the method according to the present invention and under the same conditions be achieved a virtual transmission capacity of 360 Gbit/h even though the file in the transmission is subjected to a specific non-transmission-related processing. The virtual transmission capacity for a given line is in other words only dependent on the compression factor, but implies for the receiver or user when the transmission takes place with a compression factor of 50 which is very far from an upper limit of the applicant's own data compression technology, an essential improvement of the performance even when it is compared with the up to now used methods on Internet for data transmission without specific processing.

Finally it is to be understood that the herein disclosed methods according to the invention shall not be incompatible with the corresponding specific processing in the sender according to predetermined criteria. The processing will then take place before the compression coding in step 102, and in the division in packets will not only the data type be taken in regard, but also the possible specific processing. A specific processing of this kind at the sender side will, however, as a rule be inexpedient due to the capacity requirements, but will according to the circumstances have no consequences for the other transmission and processing procedures as used in the methods according to the present invention.

but will according to the circumstances have no consequences for the other transmission and processing procedures as used in the methods according to the present invention.

PATENT CLAIMS

1. A method in the transmission in a data communications network, particularly Internet, of arbitrarily formatted files comprising one or more different data types, between a sender (1) comprising a data-processing
5 device (2) connected to the data communications network, wherein the sender (1) represents an information provider, and one or more receivers (8) with respective data-processing devices connected with the data communications network, wherein each receiver represents a user, wherein the transmission takes place via a dedicated server (5) provided in or
10 assigned to the data communications network, wherein files which shall be transmitted are stored in a database (3) at the sender (1) or in a database (4) accessible from the sender (1) and which for the transmission that substantially takes place transparently for both sender (1) and receiver (8), are downloaded to the data-processing device (2) of the sender (1), and
15 wherein the method is characterized by processing a file specifically for one or more users with user application software for one or more user applications under determined conditions, the user application processing with said user application software taking place consecutively in a data-processing device (6) of the server (5) during the transmission and/or
20 consecutively in the data-processing device of the receiver (8) as the file is received and/or in the receiver's data-processing device after the file has been received, and performing said user application processing with said user application software stored in one or more of the following: the sender (1), the server (5) or the receiver (8), and as required transmitted before or in
25 phase with said processing to a an actual processing location.

2. A method according to claim 1, characterized by comprising consecutive or approximately simultaneous and/or or interfoliated realized steps for
a) compression-coding the file which shall be transmitted with a proprietary
30 data compression procedure or a general loss-free data compression procedure,
b) dividing the compression-coded file in packets,
c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
35 d) providing the packets with receiver address, and
e) transmitting the compression-coded file to one or more receivers (8)

according to the receiver addresses of the packets, as well as a further step,
for

f) decoding the received file at the receiver (8) according to the data
compression procedure or procedures already used for the compression
coding.

- 5
3. A method in transmission in a data communications network,
particularly Internet, of arbitrarily formatted files comprising one or more
different data types, between a sender (1) comprising a data-processing
device (2) connected to the data communications network, wherein the
10 sender (1) represents an information provider, and one or more receivers (8)
with respective data-processing devices connected with the data
communications network, wherein each receiver represents a user, wherein
transmission takes place via a dedicated server (5) provided in or assigned to
the data communications network, wherein files which shall be transmitted
15 are stored in a database (3) at the sender (1) or in a database (4) accessible
from the sender (1) and which for the transmission that substantially takes
place transparently for both sender (1) and receiver (8), are downloaded to
the data-processing device (2) of the sender (1), and wherein the method is
characterized by comprising consecutive or approximately simultaneous
20 and/or interfoliated realized steps for
- a) compression-coding the file which shall be transmitted with a proprietary
data compression procedure or a general loss-free data compression
procedure,
 - b) dividing the compression-coded file in packets,
 - 25 c) transmitting the packet-divided compression-coded file to the dedicated
server (5) together with receiver addresses,
 - d) providing the packets with receiver address, and
 - e) transmitting the compression-coded file to one or more receivers (8)
according to the receiver addresses of the packets, and as well as further
30 steps for
 - f) decoding the received file at the receiver (8) according to the data
compression procedure or procedures already used for the compression
coding, and
 - g) additionally processing the file specifically for one or more users with user
35 application software for one or more user applications under determined
conditions, the user application processing with said user application
software taking place consecutively in a data-processing device (6) of the

server (5) during the transmission and/or consecutively in the data-processing device of the receiver (8) as the file is received and/or in the data-processing-device of the receiver (8) after the file has been received, and performing said user application processing with said user application software being stored in one or more of the following: the sender (1), the
5 server (5) or the receiver (8) and as required transmitted before or in phase with the processing to an actual processing location.

4. A method according to claim 3,
characterized by the sender (1) simultaneously with the initialization of the
10 transmission or during or after the transmission to the server (5) sending a message to the receiver (8) with a resource address and an access code and receiving a confirmation from the server (5) when the latter has received the file and the confirmation from the receiver (8) when the latter has received the file and downloaded it to its data-processing device.

15 5. A method according to claim 3, wherein the arbitrarily formatted file comprises one or more of the following data types, viz. image data, alphanumeric data, graphic data and fonts,
characterized by using the proprietary data compression procedure for compressing image data, and by using the general loss-free compression
20 procedure substantially for compression of alphanumeric data, graphics data and fonts.

6. A method according to claim 3,
characterized by storing software for data compression coding and decoding
in the server (5) and downloading said software automatically respectively to
25 the data-processing device (2) of the sender (1) for coding the file when the transmission is initialized and to the data-processing device of the receiver (8) for decoding the file when it is received.

7. A method according to claim 3,
characterized by the packet division taking place dependent on the data type,
30 such that each packet comprises a determined data type.

8. A method according to claim 3,
characterized by said user application processing taking place in the server
(5) after a preceding decoding of the file in the server by means of the
software for the data compression coding, the software for the user

application processing either being stored at the sender (1) and/or at the receiver (8) and being transmitted to the data-processing device of the server when said user application processing shall take place, or beforehand stored in the data-processing device (6) of the server (5), and after said user
5 application processing again compression-coding the file with software stored in the server for transmission to the receiver (8), the server (5) on the basis of the receiver address checking whether processing conditions are present.

9. A method according to claim 8,
10 characterized by the processing conditions assigned to a determined receiver address being stored in the server (5) together with software for said user application processing and being accessed by the server (5) on the basis of the receiver address.

10. A method according to claim 8,
15 characterized by performing said user application processing on one or more determined data types such that only packets comprising the determined data type are decoded before said processing and coded anew after said processing has terminated.

11. A method according to claim 3,
20 characterized by the decoding of the file at the receiver (8) taking place consecutively as the file is received.

12. A method according to claim 11,
characterized by said user application processing taking place consecutively in the data-processing device of the receiver (8) before and/or after the
25 decoding of the file which is received, the software for said processing either being stored at the receiver (8) and/or in the sender (1) and/or in the server (5) and being transmitted to the data-processing device of the receiver (8) when processing shall take place or before beforehand being stored in the data-processing device of the receiver (8).

30 13. A method according to claim 3, characterized by storing the file as it is received in the data-processing device of the receiver (8), and then decoding the file by the receiver (8) at a later suitably selected time.

14. A method according to claim 13,
characterized by said user application processing of the stored file taking
place in the data-processing device of the receiver (8) before and/or after the
decoding of the file, the software for said processing either being stored at
5 the sender (1) and/or in the server (5) and transmitted to the data-processing
device of the receiver (8) when said processing shall take place or
beforehand entered in the data-processing device of the receiver (8).
15. A method according to claim 3,
characterized by the dedicated server (5) being implemented on a general
10 network server at the sender (1).
16. A method according to claim 3,
characterized in that user names, receiver addresses, files and the given user
application processing conditions assigned to user names or receiver
addresses temporarily or permanently are stored in a database (7) provided in
15 the server (5).

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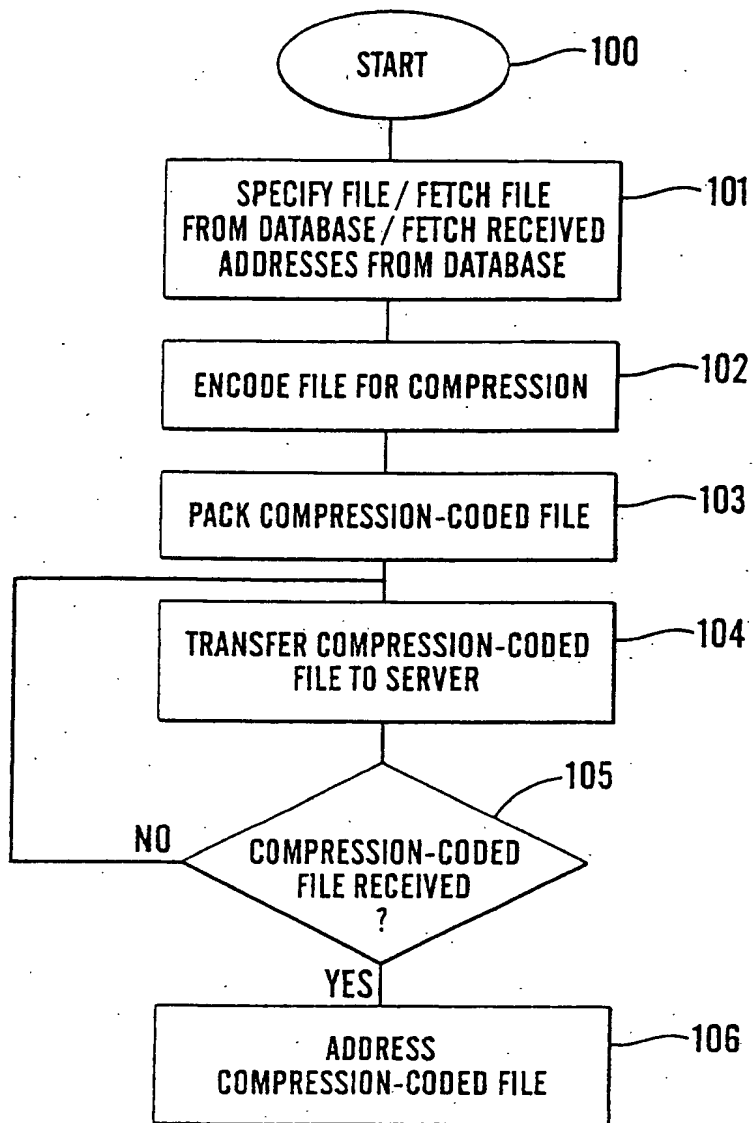


Fig.3

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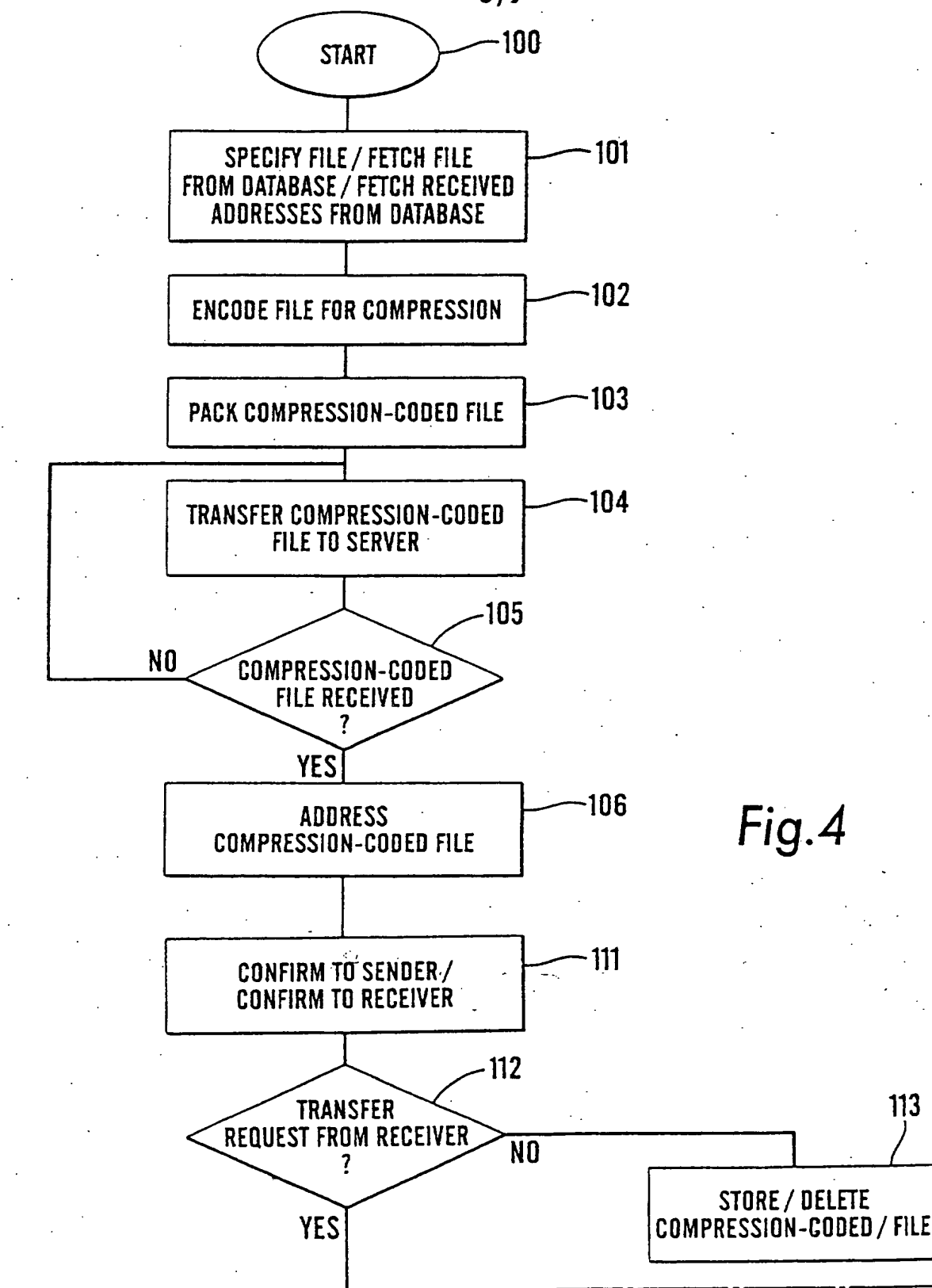


Fig.4

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PCT

PCT/NO 000000098
REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

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PCT/NO 000000098

International Application No.

21 MARS 2000 (21.03.00)

International Filing Date



PATENTSTYRET

Styret for det indvirkende Retsvæsen

PCT International application

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) Opti41PCT

Box No. I TITLE OF INVENTION

Methods in the transmission of files in a data communication network

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

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☐ This person is also inventor.

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Teleprinter No.

State (that is, country) of nationality:

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State (that is, country) of residence:

NO

This person is applicant
for the purposes of:
☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

FULDSETH, Arild
Jacob Aalls gate 4
N-0368 Oslo
Norway

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box
is marked, do not fill in below.)

State (that is, country) of nationality:

NO

State (that is, country) of residence:

NO

This person is applicant
for the purposes of:
☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☐ agent

☒ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

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Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

LERVIK, John Markus
Åbyfaret 36
N-1392 Asker
Norway

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality: NO

State (that is, country) of residence: NO

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

MICHELSSEN, Rolf
Klostergata 80A
N-7030 Trondheim
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This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

NO

State (that is, country) of residence:

NO

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

PEDERSEN, Nils-Johan
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Norway

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

NO

State (that is, country) of residence:

NO

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

LEISTAD, Geirr I.
Jongsstubben 19
N-1337 Sandvika
Norway

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

NO

State (that is, country) of residence:

NO

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No. V DESIGNATION TES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BR Brazil | |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
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| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> UG Uganda |
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| <input checked="" type="checkbox"/> IS Iceland | |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> YU Yugoslavia |
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| | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KR Republic of Korea | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |
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| <input checked="" type="checkbox"/> LK Sri Lanka | <input type="checkbox"/> |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CL		<input type="checkbox"/> Further priority claim indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 22 March 1999 (22.03.99)	19991371	NO		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): (1)

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

ISA / SE

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 4
description (excluding sequence listing part) : 15
claims : 5
abstract : 1
drawings : 5
sequence listing part of description : -
Total number of sheets : 30

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☒ separate signed power of attorney (4)
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☐ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other (specify): Copy of Search Report from NO19991371

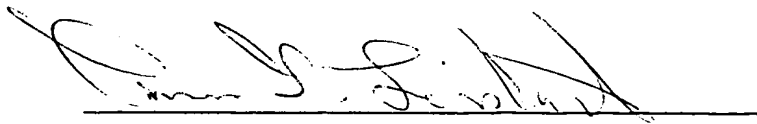
Figure of the drawings which should accompany the abstract:

Language of filing of the international application:

Norwegian

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).


Geirr I. Leistad

For receiving Office use only	
1. Date of actual receipt of the purported international application: 21 MARS 2000 (21.03.00)	2. Drawings: <input checked="" type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA/SE	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

For International Bureau use only	
Date of receipt of the record copy by the International Bureau: 04 APRIL 2000	(04.04.00)

1/7

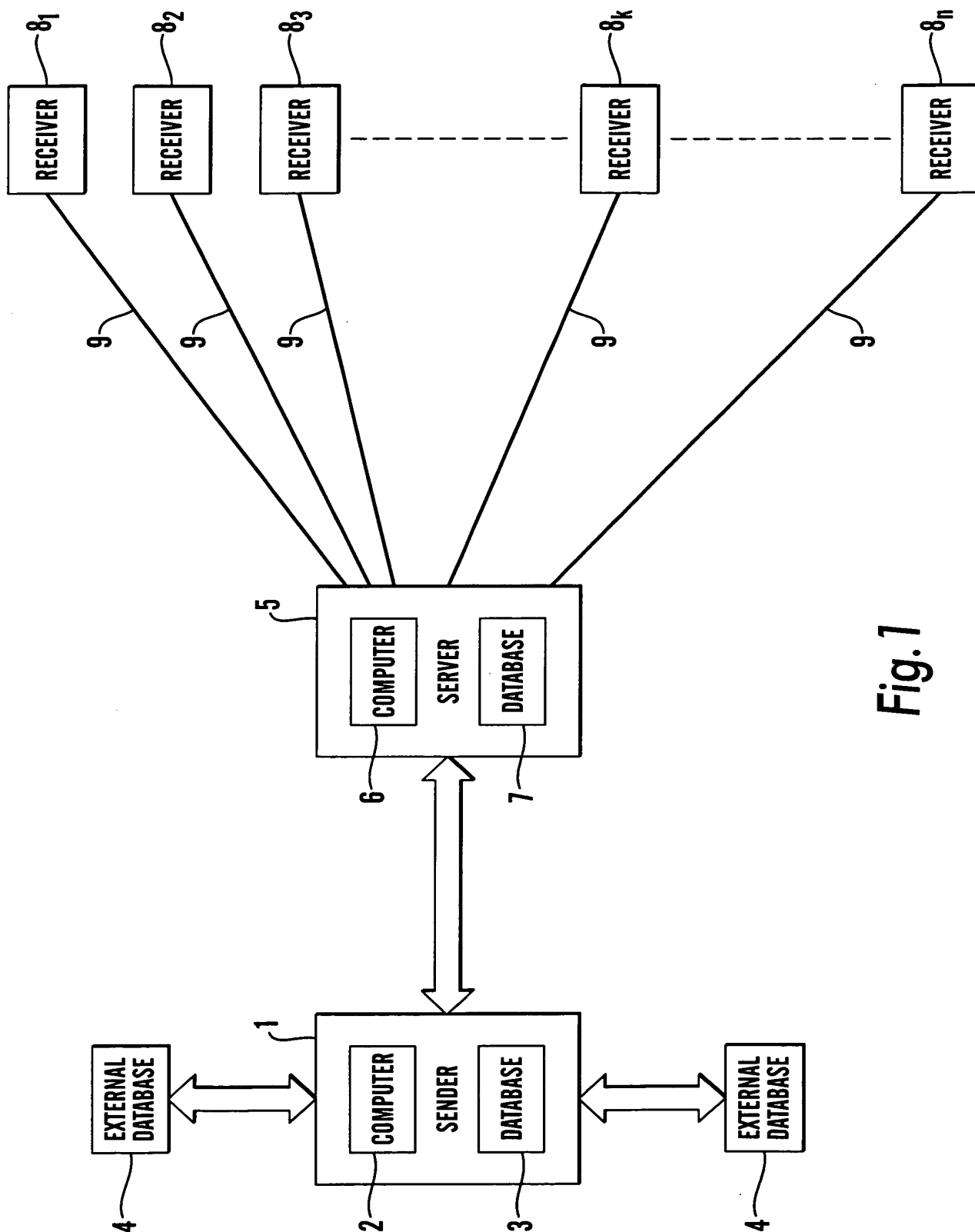


Fig. 1

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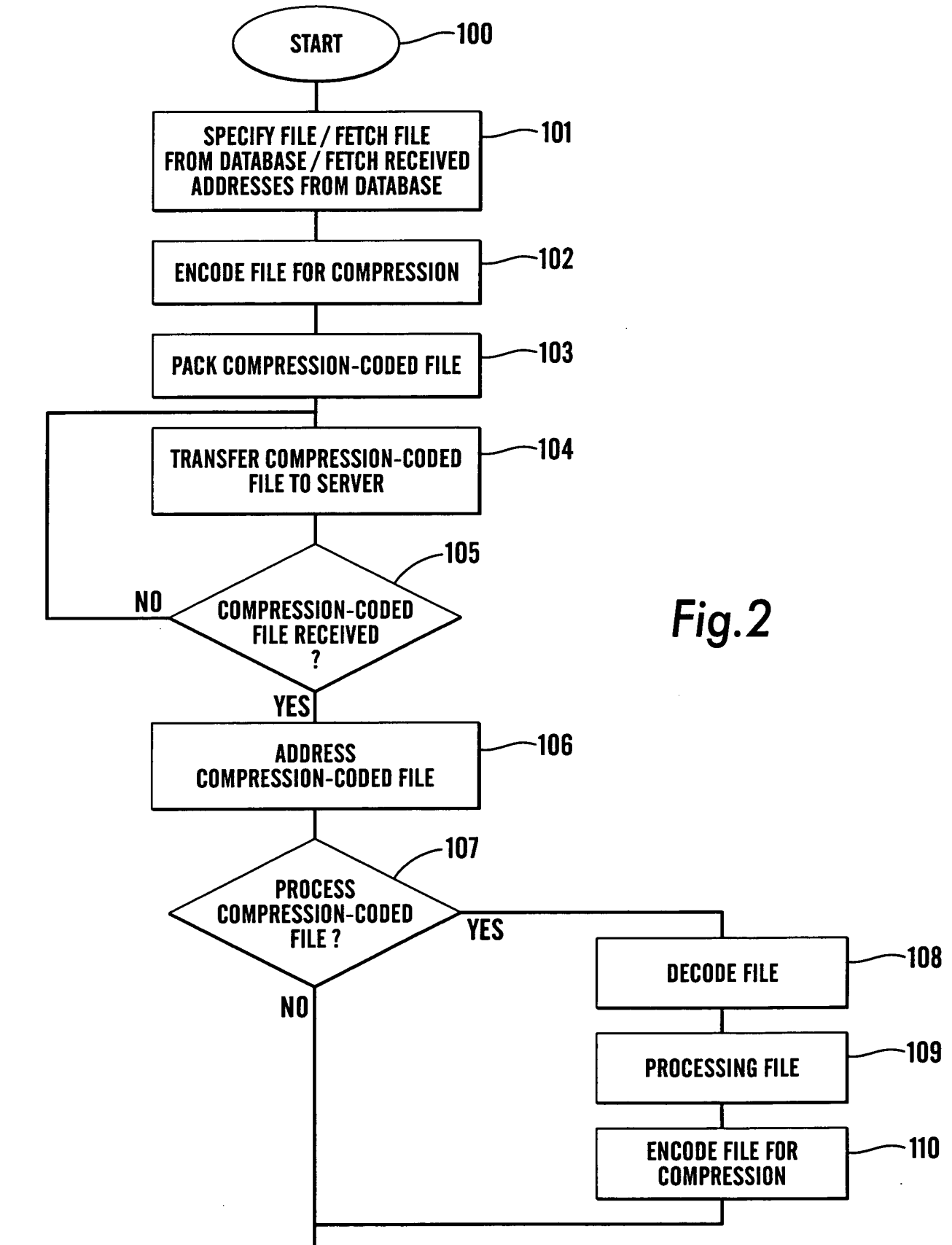


Fig.2

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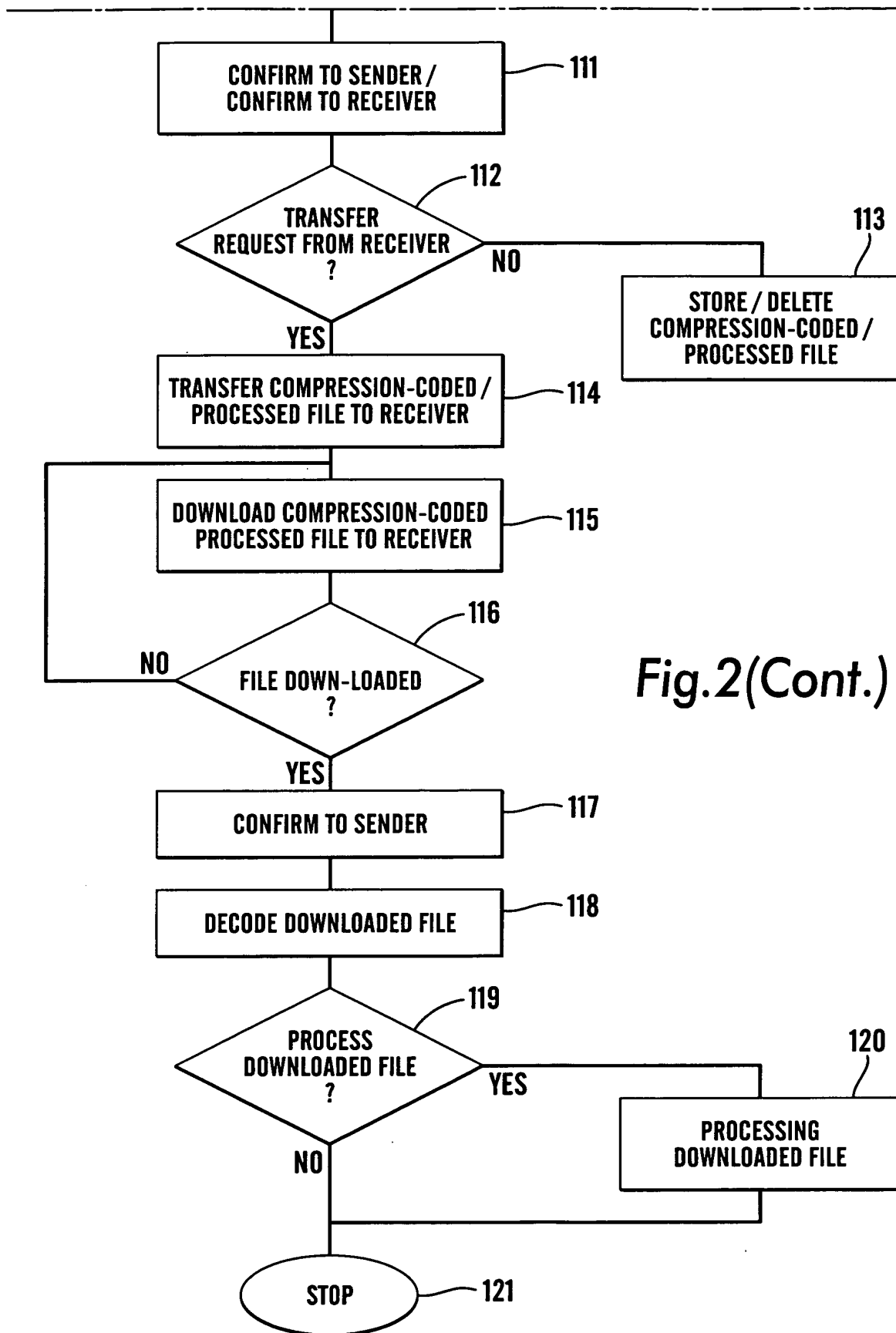


Fig.2(Cont.)

4/7

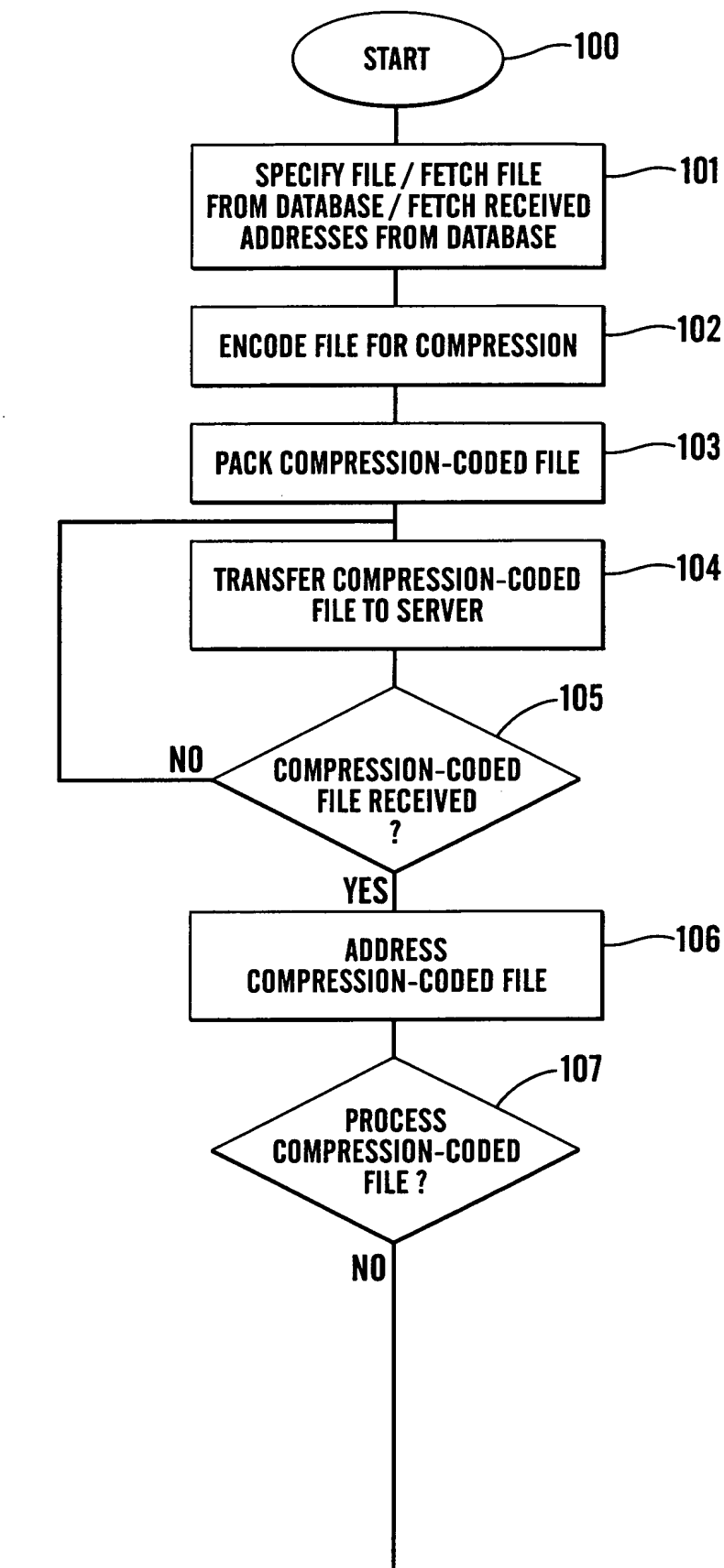


Fig.3

5/7

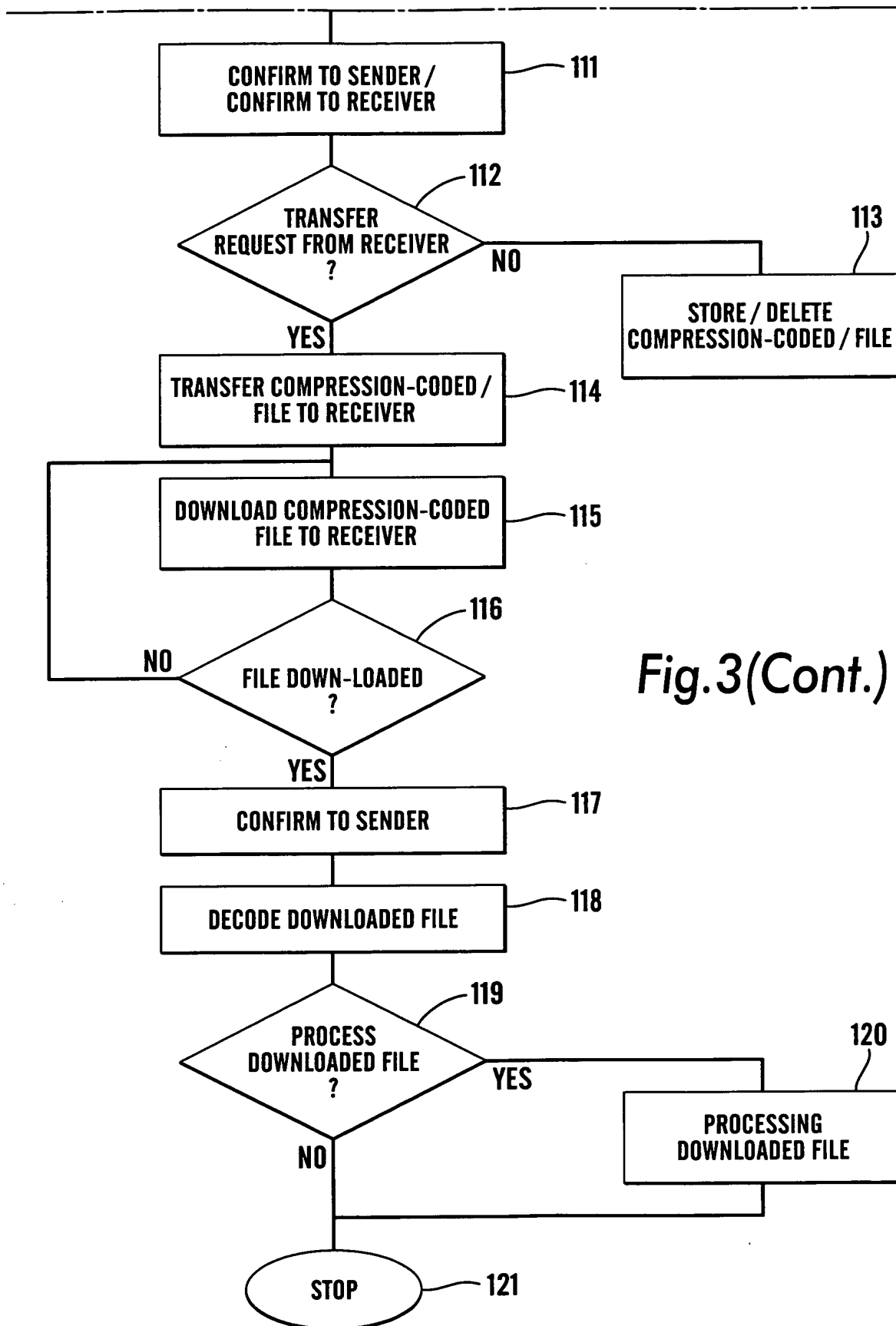


Fig.3(Cont.)

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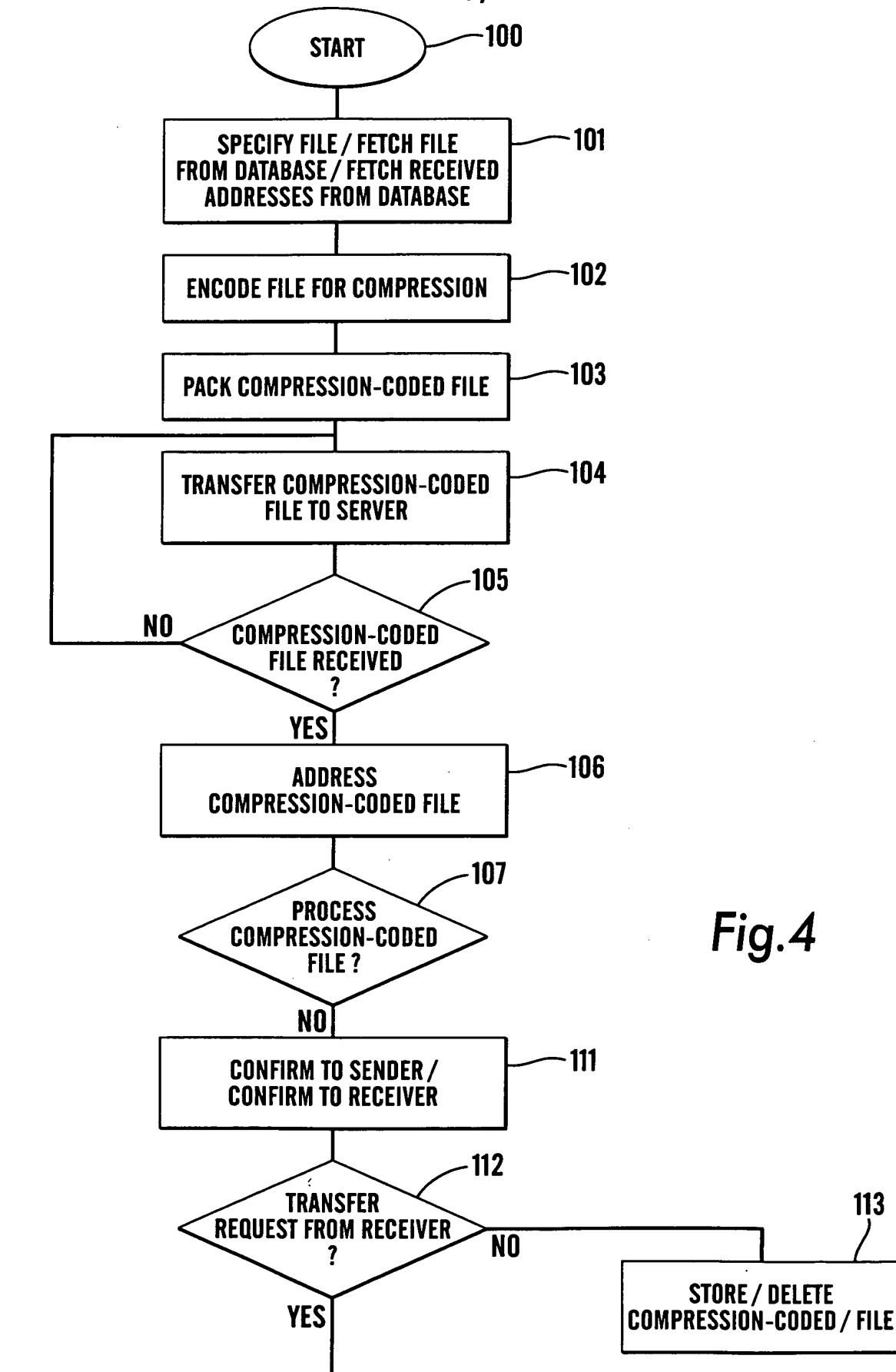
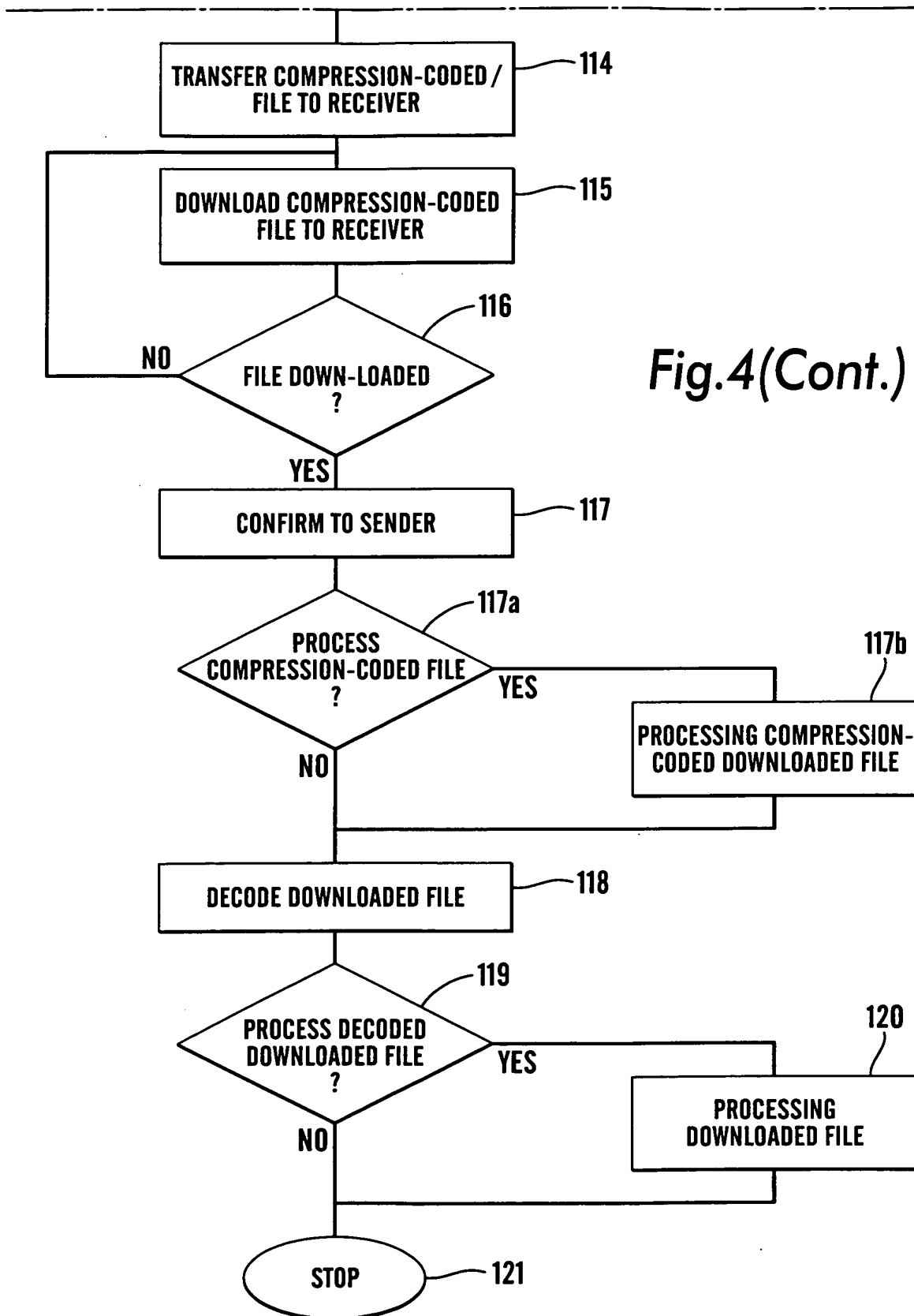


Fig.4

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SUBSTITUTE SHEET

Fremgangsmåter ved overføring av filer i et datakommunikasjonsnett

- Oppfinnelsen angår fremgangsmåter ved overføring i et datakommunikasjonsnett, spesielt Internett, av vilkårlig formaterte filer bestående av en eller flere forskjellige datatyper, mellom en sender
- 5 omfattende en til datakommunikasjonsnett koblet databehandlingsinnretning, hvor senderen representerer en informasjonsleverandør, og en eller flere mottakere med respektive til datakommunikasjonsnett koblete databehandlingsinnretninger, hvor hver mottaker representerer en bruker, hvor det ved fremgangsmåten benyttes en i
- 10 eller til datakommunikasjonsnett anordnet dedisert tjener, og hvor filene som skal overføres, er lagret i en database hos senderen eller i en fra senderen aksesserbar database og for overføringen som skjer hovedsakelig transparent både for sender og mottaker, nedlastes til senderens databehandlingsinnretning.
- 15 Behovet for rask, effektiv og sikker overføring av filer for applikasjonsformål er raskt økende. Spesielt gjelder dette i mediaindustrien hvor det er ønskelig med overføring av store filer sammensatt av forskjellige datatyper, herunder bildeinformasjon som er svært kapasitetskreven- de. Det meste av den informasjon som benyttes i mediaindustrien foreligger
- 20 digitalisert og overføres på digital form, og selv om dette kan skje via eksisterende bredbånds datakommunikasjonsnett, blir allikevel overføring av kildeinformasjon som representerer store datamengder, typisk flere Gbyte, en kostbar og for brukeren tidkrevende prosess. Fremfor alt er det derfor ønskelig å kunne spare tid og kostnader ved overføringen samt å gjøre selve
- 25 overføringsprosessen mer enkel og effektiv, noe som vil gi en sluttbruker store fordeler sammenlignet med nåværende filoverføringssystemer. På et allment tilgjengelig datakommunikasjonsnettverk som Internett har trafikken bare økt og økt, noe som gjør overføringen av store datamengder og store filer på Internett både tidkrevende og kostnadskreven- de. For store
- 30 datamengder eller omfattende dokumenter kan det derfor være et alternativ å benytte kurertjenester eller filoverføring på dediserte ISDN-linjer. Selv om slike tiltak garanterer en sikker overføring, er det likevel forbundet med betydelig kostnader, og bruk av kurertjenester vil i en lang rekke tilfeller være uhensiktsmessig på grunn av tidsaspektet.

I forbindelse med overføring av filer er det velkjent å databehandle filene i forbindelse med overføring. En slik databehandling kan typisk omfatte forskjellige former for kompresjonskoding for å redusere datamengden som skal overføres, eller tiltak for å beskytte dataene som overføres, mot kopiering. I internasjonal publisert patentsøknad WO98/44402 er det således beskrevet en fremgangsmåte til kopieringsbeskyttelse av data som lastes ned fra en tjener, typisk over World Wide Web til en klient for å presenteres for en bruker. De overførte og nedlastede data beskyttes kryptografisk ved kryptering og hashing. Prosesseringen for å oppnå dette vil da kunne foregå i nettjeneren før overføringen på eksempelvis World Wide Web. Videre er det i en artikkel av Michael Fraase, "Compression pros deliver telecom with SITcom 1.0: Aladdin app offers transparent connection and compression" (MacWEEK, bind 8, nr. 2, 10. januar 1994, side 43(2)) beskrevet telekommunikasjonsprogramvare som automatisk kan komprimerer filer under overføring med bruk av det såkalte "Stuffit"-hjelpemiddel fra Aladdin Systems Inc. Brukerne kan benytte denne programvaren som kalles "SITcomm", til automatisk å konvertere filer eller mappehierarkier til "Stuffit"-arkiver før opplasting eller til automatisk å utvide arkivene etterhvert som de lastes ned. SITcomm kan også benytte en såkalt "toolbox" for å implementere alle forbindelser, filoverføringer og emuleringer.

Fra US patent nr. 5 270 805 (Abe & al., overdratt til Canon) er det dessuten kjent en datakommunikasjonsinnretning som genererer data som henholdsvis tegndata og fargebilledata, idet disse data deles mellom respektive forskjellige blokkområder, idet blokkområdet for billedataene dessuten kan deles i ytterligere blokkområder i samsvar med bildekarakteristikkene til billedataene. I hvert tilfelle foregår dataoverføringen blokkvis, og ved hjelp av en konverteringsinnretning bestemmes det hvorvidt en funksjon er tilstede i mottakerinnretningen og de overførte data i blokkområdene konverteres i henhold til dette. Eksempelvis kan det da innebære at dersom mottakeren ikke har muligheter for å prosessere et fargebilde, vil fargebilledataene konverteres til data som kan prosesseres av mottakeren.

I mange tilfelle overføres data av filer med tanke på en spesifikk prosessering hos mottakeren, eksempelvis for forskjellige applikasjoner, og fordelaktig kunne en slik prosessering som i utgangspunktet ikke har noen tilknytning til selve overføringsprosessen, kunne skje i tilknytning til denne.

Hensikten med den foreliggende oppfinnelse er derfor å skaffe fremgangsmåter som effektiviserer en kombinert overføring og ikke overføringsrelatert prosessering av data i filer på offentlig tilgjengelige datakommunikasjonsnett, eksempelvis Internett.

- 5 Det er spesielt hensikten at en overføring av filer med tilknyttet spesifikk prosessering skal kunne skje under hensyntagen til en eventuell overføringsspesifikk prosessering av filene og sørge for at overføring av filer mellom en sender og en eller flere mottakere med tilknyttet spesifikk prosessering for en bruker og brukerrelaterte applikasjoner realiseres ved
- 10 hurtige og sikre transaksjoner mellom partene.

- Det er også en hensikt med oppfinnelsen at store filer skal kunne overføres hvor som helst i verden og da å kombinere overføringen med en spesifikk prosessering, uten at overføring og prosessering legger beslag på unødige store dataressurser hos sender og mottaker. Overføring og spesifikk
- 15 prosessering skal da kunne finne sted med hovedsakelig transparent både for sender og mottaker, slik at disse kan utnytte sine dataressurser til andre oppgaver mens selve overføringen finner sted.

- De ovennevnte hensikter og fordeler oppnås i henhold til oppfinnelsen med fremgangsmåte som er kjennetegnet ved å prosessere filen spesifikt for én
- 20 eller flere brukere og/eller én eller flere applikasjoner under gitte betingelser, idet denne spesifikke prosessering finner sted fortløpende i tjeneren under overføringen og/eller fortløpende i mottakerens databehandlingsinnretning etter hvert som filen mottas, og/eller i mottakerens databehandlingsinnretning etter at filen er mottatt, og å utføre prosesseringen med programvare som er
- 25 lagret hos én eller flere av de følgende: senderen, tjeneren eller mottakeren; og etter behov overføres forut for eller i fase med prosesseringen til et angjeldende prosesseringssted.

- Den ovennevnte fremgangsmåte omfatter fordelaktig fortløpende eller tilnærmet samtidig og/eller interfoliert realiserende trinn for
- 30 a) å kompresjonskode filen som skal overføres med en egen datakompresjonsprosedyre eller en generell, tapsfri datakompresjonsprosedyre,
- b) å dele den kompresjonskodede fil i pakker,
- c) å overføre den pakkedelte, kompresjonskodede fil til den dediserte tjener,
- 35 sammen med mottakeradresser,

- d) å forsyne pakkene med mottakeradresse, og
- e) å overføre den kompresjonskodede fil til én eller flere mottakere i henhold til pakkenes mottakeradresser, samt dessuten ytterligere trinn for
- f) å dekode den mottatte fil hos mottakeren i samsvar med den eller de allerede for kompresjonskodingen benyttede datakompresjonsprosedyrer.

De ovennevnte hensikter og fordeler oppnås dessuten i henhold til oppfinnelsen med en fremgangsmåte som omfatter fortløpende eller tilnærmet samtidig og/eller interfoliert realiserte trinn for

- a) å kompresjonskode filen som skal overføres med en egen datakompresjonsprosedyre eller en generell, tapsfri datakompresjonsprosedyre,
- b) å dele den kompresjonskodede fil i pakker,
- c) å overføre den pakkedelte, kompresjonskodede fil til den dediserte tjener, sammen med mottakeradresser,
- d) å forsyne pakkene med mottakeradresse, og
- e) å overføre den kompresjonskodede fil til én eller flere mottakere i henhold til pakkenes mottakeradresser, samt dessuten ytterligere trinn for
- f) å dekode den mottatte fil hos mottakeren i samsvar med den eller de allerede for kompresjonskodingen benyttede datakompresjonsprosedyrer, og dessuten å prosessere filen spesifikt for én eller flere brukere og/eller for én eller flere applikasjoner under gitte betingelser, idet den spesifikke prosessering finner sted fortløpende i tjeneren under overføringen og/eller fortløpende i mottakerens databehandlingsinnretning etter hvert som filen mottas og/eller i mottakerens databehandlingsinnretning etter at filen er mottatt, og å utføre prosesseringen med programvare som er lagret hos én eller flere av de følgende: senderen, tjeneren eller mottakeren; og etter behov overføres forut for eller i fase med prosesseringen til et angjeldende prosesseringssted.

- I henhold til oppfinnelsen er det fordelaktig at senderen samtidig med at overføringen av filen initieres eller under eller etter overføringen til tjeneren sender en melding til mottakeren med en ressursadresse (URL) og en aksesskode og mottar en bekreftelse fra tjeneren når denne har mottatt filen og en bekreftelse fra mottakeren når denne har mottatt filen og lastet den ned til sin databehandlingsinnretning.

Hvor den vilkårlig formaterte fil omfatter en eller flere av de følgende datatyper, nemlig bildedata, alfanumerisk data, grafikkdata og fonter, er det i henhold til oppfinnelsen henholdsvis fordelaktig at den egne datakompresjonsprosedyre benyttes til kompresjon av bildedata og at den generelle, tapsfri kompresjonsprosedyre hovedsakelig benyttes til kompresjon av alfanumeriske data, grafikkdata og fonter.

I henhold til oppfinnelsen er det fordelaktig at programvare for datakompresjonskoding og -dekoding lagres i tjeneren og nedlastes automatisk henholdsvis til senderens databehandlingsinnretning for koding av filen når overføringen initieres og mottakerens databehandlingsinnretning for dekoding av filen når den mottas. I den forbindelse finner pakkedeling fortrinnsvis sted avhengig av datatypen, slik at hver pakke omfatter en bestemt datatype.

I henhold til oppfinnelsen er det fordelaktig at den spesifikke prosessering finner sted i tjeneren etter en forutgående dekoding av filen i tjeneren ved hjelp av programvaren for datakompresjonskoding, idet programvaren for prosesseringen enten er lagret hos senderen og/eller hos mottakeren og overføres til tjenerens databehandlingsinnretning når prosesseringen skal finne sted, eller på forhånd er lagt inn i tjenerens databehandlingsinnretning, og at filen etter den spesifikke prosessering igjen kompresjonskodes med programvare lagret i tjeneren for overføring til mottakeren, idet tjeneren på basis av mottakeradressen sjekker hvorvidt prosesseringsbetingelser foreligger. I den forbindelse er fortrinnsvis prosesseringsbetingelsene tilordnet en bestemt mottakeradresse lagret i tjeneren sammen med programvare for prosesseringen og aksesseres av tjeneren på basis av mottakeradressen, og fortrinnsvis utføres da den spesifikke prosessering på en eller flere bestemte datatyper, dekodes bare de pakker som inneholder den eller de bestemte datatyper forut for prosesseringen og kodes på ny etter avsluttet prosessering.

I henhold til oppfinnelsen er det fordelaktig at dekodingen av filen hos mottakeren finner sted fortløpende etter hvert som filen mottas. I den forbindelse finner den spesifikke prosessen fortrinnsvis sted fortløpende i mottakerens databehandlingsinnretning før og/eller etter dekodingen av filen som mottas, idet programvaren for prosesseringen enten er lagret hos senderen og/eller i tjeneren og overføres til mottakerens

databehandlingsinnretning når prosesseringen skal finne sted, eller på forhånd er lagt inn i mottakerens databehandlingsinnretning.

5 Det kan i henhold til oppfinnelsen også være fordelaktig at filen etter hvert som den mottas, lagres i mottakerens databehandlingsinnretning, og deretter dekodes av mottakeren på et senere, passende valgt tidspunkt.

10 I den forbindelse kan den spesifikke prosessering av den lagrede fil fortrinnsvis da finne sted i mottakerens databehandlingsinnretning før og/eller etter dekodingen av filen, idet programvaren for prosesseringen enten er lagret hos senderen og/eller i tjeneren og overføres til mottakerens databehandlingsinnretning når prosesseringen skal finne sted, eller på forhånd er lagt inn i mottakerens databehandlingsinnretning.

I henhold til oppfinnelsen er den dediserte tjener fordelaktig implementert på en allmenn netjtjener.

15 Fortrinnsvis lagres i henhold til oppfinnelsen brukernavn, mottakeradresser, filer og de gitte, til brukernavn eller mottakeradresser tilordnede prosesseringsbetingelser temporært eller permanent i en i tjeneren anordnet database.

Oppfinnelsen skal nå forklares nærmere i tilknytning til utførelseseksempler og med henvisning til den ledsagende tegning hvor

20 fig. 1 viser et systemopplegg for dataoverføring mellom en sender og flere mottakere, f.eks. i et allment tilgjengelig datakommunikasjonsnett som Internett,

fig. 2 flytdiagrammet for en foretrukket utførelse av fremgangsmåten i henhold til oppfinnelsen,

25 fig. 3 flytdiagrammet for en første variant av utførelsen på fig. 2, og

fig. 4 flytdiagrammet for en annen variant av utførelsen på fig. 2

30 Fig. 1 viser systemopplegget for filoverføring i et allment tilgjengelig datakommunikasjonsnett, eksempelvis Internett, slik dette er kjent i teknikken. En rekke informasjonsleverandører kan være knyttet til systemet, og en informasjonsleverandør er her vist representert ved en sender 1. Senderen 1 omfatter en databehandlingsinnretning eller datamaskin 2, som godt kan være en personlig datamaskin, og en database 3 tilknyttet

- datamaskinen 2. I tillegg kan senderen 1 også eventuelt kommunisere med en eller flere eksterne databaser 4. Disse eksterne databaser 4 kan være forbundet med senderen i et lokalt nettverk og være lagret på lokale databehandlingsinnretninger som godt kan være informasjonsleverandørens egne. Alternativt kan de eksterne databaser 4 være lagret hos andre informasjonsleverandører og da f.eks. aksesseres av senderen 1 over det allment tilgjengelige datakommunikasjonsnett. Senderen 1 står i forbindelse med og har til disposisjon en dedisert tjener 5 som kan være en frittstående databehandlingsinnretning med en datamaskin 6 og en dertil forbundet database 7. Tjeneren 5 kan eksempelvis aksesseres over et lokalt nett eller over det allment tilgjengelige datakommunikasjonsnett og omfatter i alle fall et ikke vist grensesnitt for et slikt allment tilgjengelig datakommunikasjonsnett som eksempelvis da kan være Internett. Alternativt kunne også tjeneren 5 være implementert på senderens egen netjtjener og den nødvendige databehandling foregå på senderens egen datamaskin. Som en dedisert tjener i datakommunikasjonsnettet kan tjeneren 5 være en delt ressurs for flere informasjonsleverandører og følgelig aksesseres fra flere sendere 1. Programvaremessig er tjeneren i utgangspunktet realisert med to moduler, én for mottak av filer og én for overføring av filer til mottakere. Ytterligere kan tjeneren omfatte flere moduler, eksempelvis for prosessering av data, meldingsformidling osv. Tjenerens programvare vil normalt være lagret i den til tjeneren tilordnede database 7, men igjen kan denne databasen være en delt ressurs for flere informasjonsleverandører eller utgjøre en del av senderens egen database 3.
- Tjeneren 5 kan over det allment tilgjengelige datakommunikasjonsnett kommunisere med et vilkårlig antall mottakere $8_1, 8_2, \dots, 8_k, \dots, 8_n$. Denne kommunikasjonen skjer da på det allment tilgjengelige datakommunikasjonsnett, eksempelvis Internett, over linjer 9. Mottakerne utgjør brukere av informasjon og får på anmodning informasjonen overført fra informasjonsleverandøren eller senderen 1 i form av filer. De mottatte filer kan etter nedlasting til mottakeren 8 prosesseres på en databehandlingsinnretning hos mottakeren, lagres i et hos mottakeren lokalt dataminne og på et for mottakerens passende tidspunkt utnyttes til en brukerspesifikk applikasjon.
- Det er en del av hensikten med oppfinnelsen at selve filoverføringen og samtlige av de operasjoner som i den forbindelse utføres av tjeneren 5, skjer

hovedsakelig transparent overfor såvel sender 1 som mottakere 8. Dette betyr i praksis at i hvertfall mens filoverføringen pågår, vil senders som mottakeres databehandlingsinnretninger eller datamaskiner kunne benyttes til andre oppgaver, da selve filoverføringsoperasjonen ikke i vesentlig grad vil belaste de nevnte datamaskiner.

En foretrukket utførelse av fremgangsmåten i henhold til oppfinnelsen skal nå beskrives med henvisning til fig. 2, som gjengir et flytdiagram som viser de enkelte trinn i fremgangsmåten. I den forbindelse skal det bemerkes at alle henvisninger i flytdiagrammet til spesifikk prosessering viser til en brukerspesifikk eller applikasjonsspesifikk prosessering som ikke har noen konsekvenser for selve filoverføringen som sådan.

Utførelsen av fremgangsmåten i henhold til oppfinnelsen initieres ved starttrinnet 100 på senderens 1 datamaskin 2 som vist på fig. 2. Med senderen skal det forstås en informasjonsleverandør som betjener en rekke klienter som utgjør mottakerne eller brukerne av informasjonen. I trinn 101 spesifiseres filer som skal overføres og hentes fra senderens 1 database 3 eller fra databaser 4 som kan aksesseres av senderen. Disse kan være forbundet med senderen 1 i et lokalt nettverk eller aksesseres over det allment tilgjengelige datakommunikasjonsnett som det følgende vil antas å være identisk med Internett og betegnes som det. Det skal forstås at filen som skal overføres, kan bestå av forskjellige typer kildeinformasjon som godt kan befinne seg i flere databaser. For overføringen samles i et slikt tilfelle all kildeinformasjon i filen som skal overføres. Senderen 1 henter også inn mottakeradresser, dvs. adresser til klienter eller brukere fortrinnsvis lagret i senderens egen database 3. Det skal forstås at innhentede filer og dokumenter kan være formatert vilkårlig. De kan f.eks. være kompresjonskodet på forhånd med en eller annen egnet kompresjonsprosedyre så som MPEG for video eller film eller JPEG for stillbilder. Filene kan bestå av en rekke forskjellige datatyper, idet de ikke bare behøver å bestå av bildeinformasjon, som i dette tilfelle skal forstås som videobilder, filmbilder eller stillbilder, men kan i tillegg omfatte vanlig alfanumerisk informasjon, grafisk informasjon og eventuelt fonter. Det siste vil være aktuelt hvor alfanumerisk og grafisk informasjon i filene hos brukere vil bli benyttet i mediavirksomhet, f.eks. grafisk industri. I trinn 102 kompresjonskodes nå den samlede fil, idet det enten benyttes en egen datakompresjonsprosedyre eller en spesiell tapsfri datakompresjonsprosedyre. Den egne

kompresjonsprosedyre kan være en spesiell kompresjonsprosedyre for bildeinformasjon, eventuelt med tilpasning for stillbilder eller video. Denne egne kompresjonsprosedyre er utviklet av og tilhører nærværende søker. Det vil være aktuelt å benytte den på de deler av filen som består av

5 bildeinformasjon. Andre datatyper i den samlede fil som eksempelvis alfanumerisk og grafisk informasjon kan komprimeres med en generell, tapsfri prosedyre, idet slike tapsfrie kompresjonsprosedyrer vil være vel kjent av fagfolk på området og derfor ikke skal omtales nærmere her. Da den samlede fil eller deler av den kan være en vilkårlig formatert fil, kan filen

10 eller deler av den som nevnt allerede være underkastet en kompresjonsprosedyre. En gjentatt datakompresjon av bildeinformasjon i form av videobilder som allerede har gjennomgått en kompresjon av eksempelvis typen MPEG, vil med søkerens egne kompresjonsprosedyre som har en høyere kompresjonsfaktor enn MPEG, bli ytterligere komprimert. På

15 andre deler av filen som eksempelvis på forhånd kan ha vært underkastet en tapsfri kompresjonsprosedyre, behøver ikke den generelle, tapsfrie kompresjon å føre til en ytterligere kompresjon av filen. I alle fall utføres kompresjonskodingen i trinn 102 på senderens egen datamaskin 2 som deretter pakkedeler den samlede kompresjonskodede fil, slik at hver enkelt

20 pakke fortrinnsvis rommer en bestemt datatype og hos senderen er blitt utsatt for en bestemt form for kompresjonskoding.

Det skal forstås at den ved kompresjonskodingen benyttede programvare kan være lagret på senderens egen databehandlingsinnretning 2, men foretrukket er den lagret på tjeneren 5 og vil når filoverføringen initieres, automatisk

25 overføres til senderen 1 fra tjeneren 5.

I trinn 104 overføres nå den pakkedelte, kompresjonskodede fil fra senderens 1 datamaskin 2 til en tjener 5, som godt kan være senderens egen netttjener eller en dedisert tjener og forbundet med senderen over eksempelvis en dedisert linje, et lokalt nettverk eller et allment tilgjengelig

30 datakommunikasjonsnett som Internett. Senderen 1 vil nå i trinn 105 spørre tjeneren 5 om den kompresjonskodede fil er mottatt og hvis svaret er NEI, fortsetter filoverføringen inntil så er skjedd. Er svaret JA og den kompresjonskodede fil i sin helhet mottatt på tjeneren 5, blir nå filen forsynt med mottakeradresse i tjenerens 5 datamaskin 6 i trinn 106.

Mottakeradressen vil eksempelvis lastes ned fra senderen 1 til tjeneren 5 ved starten av overføringen. Mottakeradressen kan imidlertid også være identifikasjonskode og hensikten er i alle fall at mottakeradressen eller identifikasjonskoder benyttes i et trinn 107 implementert på tjeneren 5, hvor det tas en avgjørelse om den kompresjonskodede fil skal underkastes en spesifikk prosessering i tjeneren eller ikke. Hvis svaret er NEI, sendes en bekreftelse i trinn 111 om at filen er mottatt på tjeneren 5 og det sendes samtidig en bekreftelse til mottakeren 8, idet bekreftelsen består av en melding med ressursadresse (URL) og en aksesskode, det siste eksempelvis et passord for brukeren. I det foreliggende tilfelle vil naturligvis ressursadressen være tjenerens adresse.

Avgjørelsen i trinn 107 skjer på basis av mottakeradressen eller identifikasjonskoden, f.eks. med en tabell som for vedkommende mottakeradresse eller identifikasjonskode gir tjeneren de nødvendige prosesseringsinstruksjoner. Er svaret i trinn 107 dermed JA, dekodes filen i trinn 108 og underkastes deretter den nødvendig databehandling, dvs. en spesifikk prosessering i trinn 109. Denne prosesseringen kan være brukerspesifikk eller applikasjonsspesifikk og skjer med programvare som er lagret i tjenerens 5 database 7 eller som overføres til tjenerens database, enten på basis av mottakeradressene når filoverføringen starter eller på forhånd er lagt inn i tjenerens 5 database 7 av den enkelte mottaker. I den forbindelse skal det forstås at trinn 111 godt kan realiseres på et annet sted i overføringsprosessen, slik at bekreftelsen kan bevirke overføring av den nødvendige programvare for prosesseringen fra enten sender eller mottaker før desisjonen i trinn 107 om prosesseringen finner sted. Prosesseringen som finner sted i trinn 109 kan være brukerspesifikk eller applikasjonsspesifikk, det vil si at filen prosesseres brukerspesifikt for en eller flere brukere eller mottakere eller applikasjonsspesifikt for to eller flere brukere, slik at filen gjennomgår samme prosessering for én og samme applikasjon når denne ene og samme applikasjon implementeres hos mer enn en bruker. Prosesseringen vil som regel skje pakkevis, f.eks. bare utføres på pakker som inneholder bildeinformasjon, og det sier seg da selv at ikke samtlige pakker i filen behøver å dekodes for prosesseringen. Et typisk eksempel på prosessering som utføres, kan være behandling av bildeinformasjon med tanke på å gi bildeinformasjonen en optimal fargeprofil for vedkommende brukers applikasjon. Et eksempel på en slik fargeprofil er den såkalte ICC-standard som står for International Color Consortium som ble etablert i 1993 av 8

industrieselskaper med tanke på å skaffe en standardisert arkitektur og standardiserte komponenter for fargehåndtering i bildeinformasjon.

Digitaliserte fargebilledata vil både før og etter kompresjonskodingen typisk foreligge på RGB-kodet form. Etter at bildeinformasjon er dekodet for
5 prosessering, konverteres RGB-formatet til et CMYK-fargeformat med bruk av ICC-fargeprofilen. For så vidt kunne dette også skje på senderens datamaskin 2, men foretrukket realiseres trinn 109 som vist på tjenerens datamaskin 6. I den forbindelse kan ICC-profilen overføres automatisk til tjeneren 5 f.eks. fra senderen 1 eller en mottaker 8, men kan også være
10 forhåndslagret i tjeneren. ICC-profilen implementeres i hvert tilfelle når bildeinformasjonsformatet etter dekodingen konverteres fra RGB-formatet til CMYK-fargeformatet.

Etter avsluttet prosessering i tjeneren 5 kompresjonskodes filen igjen i trinn 110, og det avgis som ovenfor omtalt en bekreftelse i trinn 111 i form av en
15 melding til sender og en bekreftelse i form av en melding til mottakeren 8. Hva enten bekreftelsen til mottaker i trinn 111 som omtalt, er avgitt på et tidligere stadium i prosessen eller umiddelbart etter trinn 107 eller trinn 110, vil tjeneren 5 ved trinn 112 motta en overføringsanmodning fra en eller flere mottakere 8 og dersom tjeneren i trinn 112 ikke finner en slik
20 overføringsanmodning for en mottaker, kan en allerede for mottakeren kompresjonskodet og/eller prosessert fil i trinn 113 enten lagres i tjeneren 5 for senere overføring til mottakeren, eller slettes. Finner tjeneren 5 i trinn 112 derimot at det foreligger en overføringsanmodning fra en eller flere mottakere, overfører tjeneren 5 kompresjonskodede og eventuelt også
25 prosesserte filer til de respektive mottakere 8 på basis av mottakeradressene, idet hver pakke adresseres og sendes fortløpende etter trinn 107 etter hvert som pakkene mottas på tjeneren 5 eller fortløpende påfølgende trinn 110, i hvert tilfelle på basis av en mottatt overføringsanmodning, slik den foreligger ved trinn 112. Overføringen fra tjeneren 5 til mottakeren 8 skjer i trinn 114 og filen nedlastes fortløpende i trinn 115. I trinn 116 avgjøres det om filen er
30 nedlastet, og hvis svaret er NEI, fortsetter nedlastingen av en kompresjonskodet og eventuelt prosessert fil i trinn 115 inntil nedlastingen er fullført og bekreftes i trinn 116 med JA. Deretter sender mottakeren 8 i trinn 117 en bekreftelse i form av en melding til senderen 1 om at filen er lastet
35 ned. Etter at filen er mottatt og nedlastet til mottakerens datamaskin, dekodeer denne filen i trinn 118.

- Hensiktsmessig kan en spesifikk prosessering også foregå på mottakerens 8 egen datamaskin, og en avgjørelse om en slik prosessering tas i trinn 119. Hvis svaret er JA, prosesseres den nedlastede fil i trinn 120, og det er underforstått at prosesseringen kan omfatte en rekke separate
- 5 prosesseringstrinn og foregå på forskjellige datatyper. Hvor brukeren eller mottakeren 8 representerer mediaindustri eller grafisk industri, kan det naturligvis være aktuelt å implementere en passende fargeprofil i forbindelse med en konvertering fra et fargeformat til et annet. Det er heller ingen ting i veien for at en fil som allerede har gjennomgått en prosessering på tjeneren 5
- 10 i trinn 109 og etter dekodingen hos mottakeren 8 i trinn 118 prosesseres ytterligere og brukerspesifikt av mottakeren 8 i trinn 120, slik dette alternativ fremgår av fig. 2. Videre kan både den brukerspesifikke og applikasjonsspesifikke prosessering helt og holdent skje på mottakerens egen datamaskin uten noen forutgående spesifikk prosessering i trinn 109 i
- 15 tjeneren. Det er vist på fig. 3, hvor svaret i trinn 107 er NEI og sløyfen med trinnene 108-110 derfor utelatt, idet spesifikk prosessering nå bare finner sted i trinn 120. Dersom svaret i trinn 119 er NEI, er overføringen endelig fullført og hele prosessen stopper i trinn 121, som vist både på fig. 2 og fig. 3.
- 20 Det er også mulig at visse former for prosessering kan utføres i tjeneren 5 på en kompresjonskodet fil, uten at en forutgående dekoding finner sted. Dette alternativ vil naturligvis tilkjennegis av en prosesseringsbetingelse, men er ikke vist på fig. 2. I praksis innebærer det at trinnene 108 og 110 sløyfes.
- Tilsvarende kan det opsjonelt også finne sted en spesifikk prosessering av
- 25 kompresjonskodede filer i mottakeren 8, uten forutgående dekoding. Dette er vist på fig. 4, hvor prosessering på basis av en avgjørelse i trinn 117a vil foregå i trinn 117b, hvorefter filen dekodes i trinn 118 og opsjonelt etter en avgjørelse i trinn 119, igjen undergår en spesifikk prosessering i trinn 120.
- I henhold til oppfinnelsen realiseres det enkelte trinn i fremgangsmåten
- 30 fortløpende og tilnærmet samtidig, slik at et trinn ikke behøver å være avsluttet før det neste påbegynnes, idet de enkelte operasjonelle trinn i praksis utføres pakkevis. Dette innebærer med andre ord at de første pakkene i filen allerede kan være nedlastet hos mottakeren 8, mens
- 35 kompresjonskoding og pakking av de siste deler av filen ennå foregår hos senderen 1. Videre skal det forstås at rekkefølgen av de enkelte trinn kan

være annerledes enn vist på flytkartet på fig. 2, som bare skjematisk gjengir en foretrukket utførelsesform. I praksis kan operasjonelle trinn være interfoliert, dvs. at eksempelvis dekoding og nedlasting av ikke-prosesserte pakker i trinn 115 i tid godt kan ligge forut for prosesseringen i trinn 109.

- 5 Også trinnene for overføring av bekreftelser mellom aktørene, dvs. sender 1, tjener 5 og mottaker 8 kan gis en annen plassering i sekvensen av trinn. En bekreftelse til mottaker 8 med ressursadresse, filreferanse og passord kan f.eks. skje allerede før selve overføringen starter og da naturligvis fra senderen 1 til mottakeren 8. Tilsvarende kan tjeneren 5 bekrefte overføringen
10 med en melding til senderen 1 umiddelbart etter trinn 107. Allikevel er det ansett som mest hensiktsmessig at bekreftelsene skjer i form av meldinger fra tjener til henholdsvis sender og mottaker etter at en eventuell prosessering i tjeneren er avsluttet. Videre vil vanligvis bekreftelsen i trinn 111 føre til at tjeneren 5 mottar en overføringsanmodning fra mottakeren 8 ved trinn 112,
15 men en overføringsanmodning kan godt være lagt inn på forhånd på basis av en allerede avgitt melding fra senderen 1.

- Det er naturligvis ikke noe krav at dekodingen av filen i trinn 118 finner sted fortløpende etter hvert som filen nedlastes. Mottakeren 8 kan velge å laste ned filen uten dekoding og deretter lagre den kompresjonskodede og
20 eventuelt allerede prosesserte fil på sin egen datamaskin i et kortere eller lengre tidsrom, med tanke på en senere applikasjon. I og med at filen allerede er kompresjonskodet, vil lagringen være lite plasskrevende. Dekodingen av den lagrede fil kan da finne sted på et senere tidspunkt og kombineres med en eventuell brukerspesifikk eller applikasjonsspesifikk prosessering på
25 mottakerens egen datamaskin. Det er da naturligvis heller ingenting i veien for at prosesseringen eller deler av den kan utføres på den lagrede, kompresjonskodede fil, altså før dekodingen finner sted, men i de fleste tilfeller vil filen prosesseres i forbindelse med dekodingen og da etter hvert som denne finner sted, f.eks. for et applikasjonsbehov som skal
30 imøtekommes på et for mottakeren eller brukeren passende tidspunkt etter at filen er overført og lagret på brukerens databehandlingsinnretning.

- Fremgangsmåten ved filoverføring i henhold til foreliggende oppfinnelse gir også stor fleksibilitet med hensyn til lagring og nedlasting av den nødvendige programvare for f.eks. prosessering. Hensiktsmessig kan eksempelvis som
35 nevnt programvaren for kompresjonskodingen være lagret hos tjeneren 5 og automatisk nedlastes til senderen 1 når overføringen initieres, men den kan

naturligvis også være forhåndslagret hos senderen. Tilsvarende kan programvare for den spesifikke prosessering være lagret såvel hos senderen 1 som tjeneren 5 og/eller mottakeren 8 og overføring av slik programvare iverksettes automatisk når f.eks. en desisjon om prosessering foreligger, hva enten den finner sted hos sender, tjener eller mottaker.

5 Fremgangsmåten ved overføring av filer i henhold til den foreliggende oppfinnelse vil være velegnet til filoverføring av tekst og bilder på Internett med tanke på anvendelse i mediaindustrien, f.eks. grafisk industri. Ved systematisk bruk av kompresjonsprosedyren basert henholdsvis på søkerens 10 egne datakompresjonsteknikk for bildeinformasjon og vanlige, kjente tapsfrie kompresjonsprosedyrer for tekster og fonter fås en filoverføring med særlig stor kapasitet, samtidig som overføringskostnadene reduseres. Søkerens egen datakompresjonsteknologi er mange ganger mer effektiv enn f.eks. de kjente 15 standarder som JPEG og MPEG med hensyn til kompresjonsfaktor og kompresjonshastighet, samtidig som kvaliteten på den dekodete informasjon f.eks. med hensyn til fargegjengivelse og oppløsning likevel er langt bedre. Eksempelvis kan store bildefiler ved den foreliggende fremgangsmåte 20 komprimeres mer enn 98% og overføres via Internett hvor som helst i verden uten å gi noen vesentlig redusert bildekvalitet. Overføringen skjer dessuten svært hurtig - som regel vil bekreftelsen på at nedlasting har funnet sted foreligge like raskt som det vil ta å skrive de tilsvarende data til en vanlig CD-ROM.

Som nevnt, vil fremgangsmåten ved den foreliggende oppfinnelse være særlig godt egnet i mediaindustrien. Da flere og flere oppgaver i 25 mediaindustrien benytter digitalbasert informasjon, krever dette en effektiv filoverføring. Samtidig kan filene i forbindelse med overføringen gjennomgå en spesifikk prosessering og denne prosesseringen vil, uansett hvor den finner sted, i likhet med andre prosedyrer under overføringen hovedsakelig skje transparent både for sender og mottaker. Ved den foreliggende 30 fremgangsmåte elimineres langt på vei behovet for linjer med høy båndbredde, da den spesifikke prosessering ikke påvirker båndbreddebehovet ved overføringen og det med bruk av f.eks. den ovenfor angitt kompresjonsfaktor, vil være mulig å oppnå en virtuell overføringsrate i størrelsesorden 10 Gbit/h på en ordinær ISDN-linje. Dersom det benyttes en 35 overføringslinje med en fast båndbredde på 2 Mbit/s, vil det ved fremgangsmåten i henhold til den foreliggende oppfinnelse og under de

- samme forutsetninger oppnås en virtuell overføringskapasitet på 360 Gbit/h, selv om filen ved overføringen underkastes en spesifikk ikke-overføringsrelatert prosessering. Den virtuelle overføringskapasitet for en gitt linje er med andre ord bare avhengig av kompresjonsfaktoren, men
- 5 innebærer for mottakeren eller brukeren når overføringen skjer med en kompresjonsfaktor på 50, som langt fra er noen øvre grense for søkerens egen datakompresjonsteknologi, en vesentlig forbedring av ytelsen selv når den sammenlignes med de hittil benyttede metoder på Internett for dataoverføring uten spesifikk prosessering.
- 10 Endelig skal det forstås at de her angitt fremgangsmåter i henhold til oppfinnelsen ikke vil være uforenlig med en tilsvarende spesifikk prosessering i senderen i henhold til forhåndsbestemte kriterier. Prosesseringen vil da foregå før kompresjonskodingen i trinn 102; og det vil ved pakkedelingen ikke bare tas hensyn til datatypen, men også til den
- 15 eventuelle spesifikke prosessering. En slik spesifikk prosessering på sendersiden vil imidlertid som regel være uhensiktsmessig på grunn av kapasitetsbehovet, men vil etter omstendighetene ikke ha konsekvenser for de øvrige overførings- og prosesseringsprosedyrer som benyttet ved fremgangsmåten i henhold til den foreliggende oppfinnelse.

PATENTKRAV

1. Fremgangsmåte ved overføring i et datakommunikasjonsnett, spesielt Internett, av vilkårlig formattede filer omfattende en eller flere forskjellige datatyper, mellom en sender omfattende en til datakommunikasjonsnettet
- 5 koblet databehandlingsinnretning, hvor senderen representerer en informasjonsleverandør, og en eller flere mottakere med respektive til datakommunikasjonsnettet koblede databehandlingsinnretninger, hvor hver mottaker representerer en bruker, hvor det ved fremgangsmåten benyttes en i eller til datakommunikasjonsnettet anordnet dedisert tjener, hvor filene som
- 10 skal overføres, er lagret i en database hos senderen eller i en fra senderen aksesserbar database og for overføringen som skjer hovedsakelig transparent både for sender og mottaker, nedlastes til senderens databehandlingsinnretning, og hvor fremgangsmåten er
- k a r a k t e r i s e r t v e d
- 15 å prosessere filen spesifikt for én eller flere brukere og/eller én eller flere applikasjoner under gitte betingelser, idet denne spesifikke prosessering finner sted fortløpende i tjeneren under overføringen og/eller fortløpende i mottakerens databehandlingsinnretning etter hvert som filen mottas, og/eller i mottakerens databehandlingsinnretning etter at filen er mottatt, og å utføre
- 20 prosesseringen med programvare som er lagret hos én eller flere av de følgende: senderen, tjeneren eller mottakeren; og etter behov overføres forut for eller i fase med prosesseringen til et angjeldende prosesseringssted.
2. Fremgangsmåte i henhold til krav 1,
- k a r a k t e r i s e r t v e d at den omfatter fortløpende eller tilnærmet
- 25 samtidig og/eller interfoliert realiserende trinn for
- a) å kompresjonskode filen som skal overføres med en egen datakompresjonsprosedyre eller en generell, tapsfri datakompresjonsprosedyre,
- b) å dele den kompresjonskodede fil i pakker,
- 30 c) å overføre den pakkedelte, kompresjonskodede fil til den dediserte tjener, sammen med mottakeradresser,
- d) å forsyne pakkene med mottakeradresse, og
- e) å overføre den kompresjonskodede fil til én eller flere mottakere i henhold til pakkens mottakeradresser, samt dessuten ytterligere trinn for

f) å dekode den mottatte fil hos mottakeren i samsvar med den eller de allerede for kompresjonskodingen benyttede datakompresjonsprosedyrer.

3. Fremgangsmåte ved overføring i et datakommunikasjonsnett, spesielt Internett, av vilkårlig formattede filer omfattende én eller flere forskjellige datatyper, mellom en sender omfattende en til datakommunikasjonsnettet koblet databehandlingsinnretning, hvor senderen representerer en informasjonsleverandør, og én eller flere mottakere med respektive til datakommunikasjonsnettet koblede databehandlingsinnretninger, hvor hver mottaker representerer en bruker, hvor det ved fremgangsmåten benyttes en i eller til datakommunikasjonsnettet anordnet dedisert tjener, hvor filene som skal overføres, er lagret i en database hos senderen eller i en fra senderen aksesserbar database og for overføringen som skjer hovedsakelig transparent både for sender og mottaker, nedlastes til senderens databehandlingsinnretning,
- 15 k a r a k t e r i s e r t v e d at den omfatter fortløpende eller tilnærmet samtidig og/eller interfoliert realiserde trinn for
- a) å kompresjonskode filen som skal overføres med en egen datakompresjonsprosedyre eller en generell, tapsfri datakompresjonsprosedyre,
- 20 b) å dele den kompresjonskodede fil i pakker,
- c) å overføre den pakkedelte, kompresjonskodede fil til den dediserte tjener, sammen med mottakeradresser,
- d) å forsyne pakkene med mottakeradresse, og
- e) å overføre den kompresjonskodede fil til én eller flere mottakere i henhold til pakkens mottakeradresser, samt dessuten ytterligere trinn for
- 25 f) å dekode den mottatte fil hos mottakeren i samsvar med den eller de allerede for kompresjonskodingen benyttede datakompresjonsprosedyrer, og dessuten å prosessere filen spesifikt for én eller flere brukere og/eller for én eller flere applikasjoner under gitte betingelser, idet den spesifikke prosessering finner sted fortløpende i tjeneren under overføringen og/eller fortløpende i mottakerens databehandlingsinnretning etter hvert som filen mottas og/eller i mottakerens databehandlingsinnretning etter at filen er mottatt, og å utføre prosesseringen med programvare som er lagret hos én eller flere av de følgende: senderen, tjeneren eller mottakeren; og etter behov
- 30 overføres forut for eller i fase med prosesseringen til et angjeldende prosesseringssted.
- 35

4. Fremgangsmåte i henhold til krav 3,
karakterisert ved at senderen samtidig med at overføringen av
filen initieres eller under eller etter overføringen til tjeneren sender en
5 melding til mottakeren med en ressursadresse og en aksesskode og mottar en
bekreftelse fra tjeneren når denne har mottatt filen og en bekræftelse fra
mottakeren når denne har mottatt filen og lastet den ned til sin
databehandlingsinnretning.
5. Fremgangsmåte i henhold til krav 3, hvor den vilkårlig formaterte fil
omfatter en eller flere av de følgende datatyper, nemlig bildedata,
10 alfanumerisk data, grafikkdata og fonter,
karakterisert ved at den egne datakompresjonsprosedyre benyttes
til kompresjon av bildedata og at den generelle, tapsfri kompresjonsprosedyre
hovedsakelig benyttes til kompresjon av alfanumeriske data, grafikkdata og
fonter.
- 15 6. Fremgangsmåte i henhold til krav 3,
karakterisert ved at programvare for datakompresjonskoding og
-dekoding lagres i tjeneren og nedlastes automatisk henholdsvis til senderens
databehandlingsinnretning for koding av filen når overføringen initieres og
mottakerens databehandlingsinnretning for dekodeing av filen når den mottas.
- 20 7. Fremgangsmåte i henhold til krav 3,
karakterisert ved at pakkedelingen finner sted avhengig av
datatypen, slik at hver pakke omfatter en bestemt datatype.
8. Fremgangsmåte i henhold til krav 3,
karakterisert ved at den spesifikke prosessering finner sted i
25 tjeneren etter en forutgående dekodeing av filen i tjeneren ved hjelp av
programvaren for datakompresjonskoding, idet programvaren for
prosesseringen enten er lagret hos senderen og/eller hos mottakeren og
overføres til tjenerens databehandlingsinnretning når prosesseringen skal
finne sted, eller på forhånd er lagt inn i tjenerens databehandlingsinnretning,
30 og at filen etter den spesifikke prosessering igjen kompresjonskodes med
programvare lagret i tjeneren for overføring til mottakeren, idet tjeneren på
basis av mottakeradressen sjekker hvorvidt prosesseringsbetingelser
foreligger.

9. Fremgangsmåte i henhold til krav 8,
karakterisert ved at prosesseringsbetingelsene tilordnet en
bestemt mottakeradresse lagres i tjeneren sammen med programvare for
prosesseringen og aksesseres av tjeneren på basis av mottakeradressen.
- 5 10. Fremgangsmåte i henhold til krav 8,
karakterisert ved at den spesifikke prosessering utføres på en eller
flere bestemte datatyper, slik at bare de pakker som inneholder den eller de
bestemte datatyper dekodes forut for prosesseringen og kodes på ny etter
avsluttet prosessering.
- 10 11. Fremgangsmåte i henhold til krav 3,
karakterisert ved at dekodningen av filen hos mottakeren finner
sted fortløpende etter hvert som filen mottas.
- 15 12. Fremgangsmåte i henhold til krav 11,
karakterisert ved at den spesifikke prosessering finner sted
fortløpende i mottakerens databehandlingsinnretning før og/eller etter
dekodningen av filen som mottas, idet programvaren for prosesseringen enten
er lagret hos senderen og/eller i tjeneren og overføres til mottakerens
databehandlingsinnretning når prosesseringen skal finne sted, eller på
forhånd er lagt inn i mottakerens databehandlingsinnretning.
- 20 13. Fremgangsmåte i henhold til krav 3,
karakterisert ved at filen etter hvert som den mottas, lagres i
mottakerens databehandlingsinnretning, og deretter dekodes av mottakeren
på et senere, passende valgt tidspunkt.
- 25 14. Fremgangsmåte i henhold til krav 13,
karakterisert ved at den spesifikke prosessering av den lagrede fil
finner sted i mottakerens databehandlingsinnretning før og/eller etter
dekodningen av filen, idet programvaren for prosesseringen enten er lagret hos
senderen og /eller i tjeneren og overføres til mottakerens
databehandlingsinnretning når prosesseringen skal finne sted, eller på
30 forhånd er lagt inn i mottakerens databehandlingsinnretning.
15. Fremgangsmåte i henhold til krav 3,
karakterisert ved at den dediserte tjener er implementert på en
allmenn netjtjener hos senderen.

16. Fremgangsmåte i henhold til krav 3,
karakterisert ved at brukernavn, mottakeradresser, filer og de
gitte, til brukernavn eller mottakeradresser tilordnede
prosesseringsbetingelser temporært eller permanent lagres i en i tjeneren
5 anordnet database.

SAMMENDRAG

- I en fremgangsmåte ved overføring i et datakommunikasjonsnett av vilkårlig formaterte filer mellom en sender som representerer en informasjonsleverandør og en eller flere mottakere som representerer brukere, benyttes ved overføringen en nettjener, idet selve overføringen skjer hovedsakelig transparent for både sender og mottaker. Før overføringen kompresjonskodes filen som skal overføres, hvorefter den overføres pakkedelt via tjeneren til mottakeren. Ved overføringen underkastes en allerede kompresjonskodet fil en prosessering spesifikk for en eller flere brukere og/eller en eller flere spesifikke applikasjoner, enten i tjeneren eller i mottakeren eller begge steder, uten at det får konsekvenser for overføringen som sådan. Programvare benyttet til prosesseringen kan være lagret enten hos senderen, tjeneren eller mottakeren og nedlastes eventuelt automatisk til prosesseringsstedet. De enkelte operasjons- og desisjonstrinn i fremgangsmåten realiseres fortrinnsvis i fortløpende, tilnærmet samtidige og/eller interfolierte trinn.
- 25 Anvendelse til overføring og spesifikk prosessering av store filer bestående av en eller flere forskjellige datatyper, herunder bildeinformasjon, på Internett, spesielt for anvendelse i mediaindustri.



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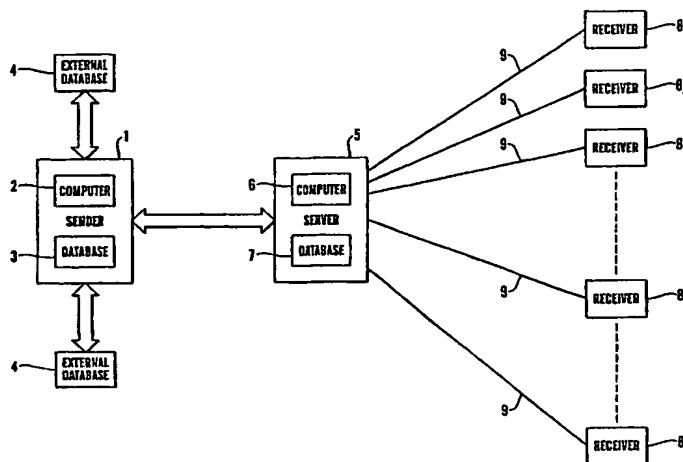
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(57) Abstract

In a method in the transmission in a data communications network of arbitrarily formatted files between a sender which represents an information provider and one or more receivers which represent users, a network server is used in the transmission, the transmission itself taking place substantially transparent to both sender and receiver. Before the transmission a file which shall be transmitted is compression-coded, whereafter it is transmitted packet-divided via the server to the receiver. In the transmission an already compression-coded file is subjected to a processing specific for one or more users and/or one or more specific applications, either in the server or in the receiver or both, without any effects on the transmission as such. Software used for the processing can be stored either at the sender, server or receiver and possibly downloaded automatically to the processing location. The particular operational and decision steps in the method are preferably realized in consecutive and approximately simultaneous and/or interfoliated steps. Use for transmission and specific processing of large files comprising one or more different data types, including image information on the Internet, particularly for use in the media industry.

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Methods in transmission of files in a data communication network

The invention concerns methods in transmission in a data communications network, particularly Internet, of arbitrarily formatted files comprising one or more different data types, between a sender comprising a data-processing
5 device connected to the data communications network, wherein the sender represents an information provider, and one or more receivers with respective data-processing devices connected with the data communications network, wherein each receiver represents a user, wherein a dedicated server provided in or assigned to the data communications network is used with the methods,
10 wherein files which shall be transmitted are stored in a database at the sender or in a database accessible from the sender and which for the transmission that substantially takes place transparently for both sender and receiver, are downloaded to the data-processing device of the sender.

The need for fast, effective and safe transmission of files for application
15 purposes is rapidly increasing. Particularly this is the case in the media industry, where it is desirable with transmission of large files composed of different data types, including image information which is very capacity-demanding. Most of the information which is used in the media industry is present digitalized and transmitted in digital form and even
20 though this can take place via existing broadband communications networks, the transmission of source information representing large data volumes, typically several Gbytes, yet becomes an expensive and for the user time-demanding process. Beyond all it is hence desirable to save time and costs in the transmission as well as making the transmission process more
25 simple and efficient, something which will offer an end user great advantages compared with present file transmission systems. In a public data communications network such as Internet, the traffic has only been increasing all the time, something which makes the transmission of large data volumes and large files on Internet both time-consuming and
30 cost-demanding. For large data volumes or extensive documents it hence may be an alternative to make use of courier services or file transmission on dedicated ISDN lines. Even though such measures guarantee a safe transmission, they are yet linked with substantial costs and the use of courier services may in a large number of cases be unsuitable due to the time factor.

In connection with transmission of files data processing the files in connection with a transmission is well-known. Data processing of this kind can typically consist of various forms of compression coding in order to reduce the data volume which shall be transmitted, or measures in order to protect the data which are transmitted against copying. In international published patent publication WO98/44402 there is thus disclosed a method for copying protection of data which are downloaded from a server, typically via World Wide Web, to a client in order to be presented to a user. The transmitted and downloaded data are protected cryptographically by encryption and hashing. The processing to this end may then take place in a network server before transmission on e.g. the World Wide Web. Further there is in a paper by Michael Fraase, "Compression pros deliver telecom with SITcom 1.0: Aladdin app offers transparent connection and compression" (MacWEEK, vol. 8, no. 2, 10. January 1994, page 43(2)) disclosed a telecommunication software which automatically can compress files during transmission using the so-called "Stuffit" tool from Aladdin Systems Inc. The users can use this software which is called "SITcomm" for automatically converting files or folder hierarchies to "Stuffit" archives before uploading or for automatically expand the archives as they are downloaded. SITcomm can also use a so-called toolbox for implementing all connections, file transmissions and emulations.

From US patent no. 5 270 805 (Abe & al., assigned to Canon) there is additionally known a data-communication device which generate data as respectively character data and colour image data, these data being divided between respective block areas. The block area for the image data can further be divided into further block areas in correspondence with the image characteristics of the image data. In each case the data transmission takes place blockwise and by means of a conversion device it is determined whether a function is present in the receiver device and the transmitted data in the block areas are converted according to this. This may e.g. then imply that if the receiver has no possibilities of processing a colour image, the colour image data will be converted to data which can be processed by the receiver.

In many cases data is transmitted in files with a specific processing at the receiver in mind, e.g. for different applications, and advantageously a

processing of this kind which basically has no connection to the transmission process as such could take place in connection therewith.

The object of the present invention is thus to provide methods which make a combined transmission and a non-transmission-related processing of data in files on public communications networks, e.g. Internet more efficient.

It is particularly the object that a transmission of files with accompanying specific processing shall take place with regard to a possible transmission-specific processing of the files and see to that the transmission of files between a sender and one or more receivers with connected specific processing for a user and user-related applications is realized with fast and secure transactions between the parties.

It is also an object of the invention that large files shall be transmitted anywhere in the world and then by combining the transmission with a specific processing, without transmission and processing requiring unnecessary large data resources at the sender and receiver. The transmission and specific processing shall then take place substantially in transparency both for the sender and receiver, such that they can exploit their data resources for other tasks while the transmission itself takes place.

The above-mentioned objects and advantages are realized according to the invention with a method which is characterized by processing a file specifically for one or more users and/or one or more applications under determined conditions, the specific processing taking place consecutively in the server during the transmission and/or consecutively in the receiver's data processing device as the file is received and/or in the receiver's data processing device after the file has been received, and performing the processing with software which is stored in one or more of the following: the sender, the server or the receiver, and as required is transmitted before or in phase with the processing to a an actual processing location.

The above-mentioned method comprises advantageously consecutive or approximately simultaneous and/or interfoliated realized steps for

- a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression procedure,
- b) dividing the compression-coded file in packets,

c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
d) providing the packets with receiver address, and
e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, as well as a further step, for
f) decoding the received file at the receiver according to the data compression procedure or procedures already used for the compression coding.

The above-mentioned objects and advantageous are additionally realized according to the invention with a method which comprises consecutive or approximately simultaneous and/or interfoliated realized steps for

a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression procedure,

b) dividing the compression-coded file in packets,

c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,

d) providing the packets with receiver address, and

e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, and as well as further steps for

f) decoding the received file at the receiver according to the data-compression procedure or procedures already used for the compression coding and additionally processing the files specifically for one or more uses and/or for one or more applications under determined conditions, the specific processing taking place consecutively in the server during the transmission and/or consecutively in the receiver's data-processing device as the file is received and/or in the receiver's data-processing device after the file has been received, and performing the processing with software which is stored in one or more of the following: the sender, the server or the receiver and which as required is transmitted before or in phase with the processing to an actual processing location.

According to the invention it is advantageous that the sender simultaneously with the initialization of the transmission of during or after the transmission to the server sending a message to the receiver with a resource address and an access code and receiving a confirmation from the server when the latter

has received the file and the confirmation from the receiver when the latter has received the file and downloaded it to its data-processing device.

Where the arbitrarily formatted file comprises one or more of the following data types, viz. image data, alphanumeric data, graphics data and fonts, it is
5 according to the invention advantageous using the proprietary data compression procedure for compressing image data, and using the general loss-free compression procedure substantially for compression of alphanumeric data, graphics data and fonts.

According to the invention is advantageous storing the software for data
10 compression coding and decoding in the server and downloading said software automatically respectively to the data-processing device of the sender for coding the file when the transmission is initialized and to the data processing-device of the receiver for decoding the file when it is received.

In that connection packet-division preferably takes place dependent on the
15 data type, such that each packet comprises a determined data type.

According to the invention it is advantageous that the specific processing takes place in the server after a preceding decoding of the file in the server by means of the software for the data compression coding, the software for the processing either being stored at the sender and/or at the receiver and
20 being transmitted to the data-processing device of the server when the processing shall take place, or beforehand stored in the data-processing device of the server, and after the specific processing again compression-coding the file with software stored in the server for transmission to the receiver, the server on the basis of the receiver address
25 checking whether processing conditions are present.

In that connection are preferably the processing conditions assigned to a determined receiver address being stored in the server together with software for the processing and being accessed by the server on the basis of the receiver address, and preferably the specific processing is then performed on
30 one or more determined data types such that only packets comprising the determined data type are decoded before the processing and coded anew after the processing has terminated.

According to the invention it is advantageous that the decoding of the file at the receiver takes place consecutively as the file is received. In that

connection the specific processing preferably takes place consecutively in the data-processing device of the receiver before and/or after the coding of the file which is received, the software for the processing either being stored at the receiver and/or in the sender and/or in the server and being transmitted to the data-processing device or the receiver when processing shall take place or before beforehand being stored in the data-processing device of the receiver.

It can according to the invention also be advantageous storing the file as it is received in the data processing-device or receiver, and then decoding the file by the receiver at a later suitably selected time. In that connection the specific processing of the stored file can then preferably take place in the data-processing device of the receiver before and/or after the decoding of the file, the software for the processing either being stored at the sender and/or in the server and transmitted to the data-processing device of the receiver when processing shall take place or beforehand entered in the data-processing device of the receiver.

According to the invention the dedicated server is advantageously implemented on a general network server.

According to the invention are user names, receiver addresses, files and the given processing conditions assigned to user names or receiver addresses preferably stored temporarily or permanently in a data base provided in the server.

The invention shall now be explained in more detail in connection with exemplary embodiments and with reference to the accompanying drawing, wherein

fig. 1 shows a system layout for data transmission between a sender and several receivers, e.g. in a public data communications network such as Internet,

fig. 2 the flow diagram for a preferred embodiment of the method according to the invention,

fig. 3. the flow diagram for a first variant of the embodiment in fig. 2, and

fig. 4. the flow diagram for a second variant of the embodiment in fig. 2.

Fig. 1 shows the system layout for file transmission in a public data communications network, e.g. Internet, such as known in the art. A number of information providers can be connected with the system and an information provider is here shown represented by the sender 1. The sender 1 comprises a data-processing device or computer 2 which well may be a personal computer and a database 3 connected with computer 2. In addition the sender 1 can optionally also communicate with one or more external databases 4. These external databases 4 can be connected with a sender in a local network and stored on local data-processing devices which well may be the information provider's own. Alternatively the external databases 4 can be stored at other information providers and then e.g. be accessed by the sender 1 via the public data communications network. The sender 1 is connected with and has at its disposal a dedicated server 5 which can be a free-standing data-processing device with a computer 6 and a database 7 connected thereto. The server 5 can e.g. be accessed via local network and or the public data communications network and comprises in any case a not shown interface for such a public data communications network which e.g. then may be Internet. Alternatively the server 5 could also be implemented on the sender's own network server and the required data processing takes place on the sender's own computer. As a dedicated server in a data communications network the server 5 can be a shared resource for several information providers and consequently be accessed from several senders 1. In regard of software the server is basically realized with two modules, one for reception of files and one for transmission of files to receivers. Additionally the server can comprise several modules, e.g. for processing of data, message switching etc. The server's software will normally be stored in the database 7 assigned to the server, but this database can in its turn be a shared resource for several information providers or form a part of the sender's own database 3.

The server 5 can via the public data communications network communicate with arbitrary number of receivers $8_1, 8_2, \dots, 8_k, \dots, 8_n$. This communication then takes place on the public available data communications network, e.g. Internet, via lines 9. The receivers are users of information and receive on request information transmitted from the information provider or the sender 1 in the form of files. The received files can after downloading to the receiver 8 be processed on a data-processing device at the receiver, stored in a local data memory at the receiver and be utilized for a user-specific application at a time appropriate for the user.

It is a part of the object of the invention that the file transmission proper and all the operations which in this connection as executed by the server 5 take place substantially transparent to the sender as well as the receivers 8. This implies in practice that at least while the file transmission takes place, the data-processing devices of both the sender and the receivers or computer could be used for other tasks, as the file transmission operation as such shall not in any considerable degree shall load the mentioned computers.

A preferred embodiment according to the invention shall now be discussed with reference to fig. 2, which renders a flow diagram showing the separate steps of the method. In this connection it shall be remarked that all references in the flow diagram to specific processing points to a user-specific or application-specific processing which has no consequences for the file transmission as such.

The embodiment of the method according to the invention is initialized at the start step 100 on the sender's 1 computer 2 as shown in fig. 2. With the sender it is to be understood an information provider which serves a number of clients which are the receivers or users of the information. In step 101 the files which shall be transmitted are specified and fetched from the database 3 of the sender 1 or from databases 4 which can be accessed by the sender.

These databases can be connected with the sender 1 in a local network or be accessed via the public data communications network which in the following will be supposed to be identical with Internet and denoted as such. It is to be understood that the file which shall be transmitted may consist of different types of source information which may well be located in several databases.

Before the transmission all source information is in such a case collected in the file to be transmitted. The sender 1 also fetches receiver addresses, i.e. addresses to clients or users, preferably stored in the sender's own database 3. It is to be understood that files and documents collected may be formatted arbitrarily. They may e.g. be compression-coded beforehand with some appropriate compression procedure such as MPEG for video or films or JPEG for stills. The files can consist of a number of different data types as they do not need to consist of image information which in this case shall be understood as video images, film images or still images, but may in addition also comprise usual alphanumeric information, graphics information and possibly fonts. The latter will be relevant where alphanumeric and graphics information in the files at the users will be applied in media enterprises, e.g.

the graphic industries. In step 102 the collected files now are compression-coded, as either a proprietary compression procedure or a particular loss-free data compression procedure is used. The proprietary data compression procedure can be a particular compression procedure for image information, possibly with an adaptation for stills or video. This proprietary compression procedure is developed by Fast Search & Transfer ASA, which has assigned the rights of use to the applicant. It will be relevant using it for those parts of the file which consist of image information. Other data types in the collected files as e.g. alphanumeric and graphics information can be compressed with a general loss-free procedure, such loss-free compression procedures being well-known to persons skilled in the art and hence not discussed in further details herein. As the collected file or parts thereof can be an arbitrarily formatted file, the file or parts thereof can as mentioned already be subjected to a compression procedure. A repeated data compression of image information in the form of video images which already have been subjected to a compression of the MPEG type will with the applicant's proprietary compression procedure which has a higher compression factor than MPEG be further compressed. In other parts of the file which e.g. beforehand may have been subjected to a loss-free compression procedure, the general loss-free compression need not effect a further compression of these parts. In any case the compression coding in step 102 executed on the sender's own computer 2 which thereafter divides the collected compression-coded files in packets, such that each separate packet preferably contains a determined data type and at the sender has been subjected to a particular form of compression coding.

It is to be understood that the software used in the compression coding can be stored on the sender's own data-processing device, but preferably it is stored in the server 5 and will, when the file transmission is initiated, automatically be transmitted to the sender 1 from the server 5.

In step 104 the packet-divided compression-coded file is now transmitted from the sender's 1 computer 2 to a server 5 which well may be the sender's own network server or a dedicated server and connected with a server via e.g. a dedicated line, a local network or a public data communications network such as Internet. The sender 1 will now in step 5 inquire the server 5 whether the compression-coded file has been received and if the answer is NO the file transmission will continue until this is the case. Is the answer YES and the

compression-coded file is completely received on the server 5, the file is now provided with receiver address in the server's 5 computer 6 in step 106. The receiver address will e.g. be downloaded from the sender 1 to the server 5 at the start of the transmission. The receiver address may, however, also be an identification code and the intention is in any case that the receiver address or the identification codes are used in a step 107 implemented on the server 5, wherein a decision is taken whether the compression-coded files shall be subjected to a specific processing in the server or not. If the answer is NO, a confirmation is sent in step 111 that the file has been received on the server 5 and simultaneously a confirmation is sent to the receiver 8, the confirmation comprising a message with a resource address (URL) and an access code, the latter e.g. a password for the user. In the present case the resource address will, of course, be the address of the server.

The decision in step 107 takes place on the basis of the receiver address or the identification code, e.g. with a table which for the relevant receiver address or identification code provides the server with the necessary processing instructions. If the answer in step 107 hence is YES, the file is decoded in step 108 and thereafter subjected to the required data processing, i.e. a specific processing in step 109. This processing can be user specific or application-specific and takes place with software which is stored in the data base 7 of the server 5 or which is transmitted to the database of the server, either on the basis of the receiver addresses when the file transmission starts or beforehand has been stored in the database 7 of the server 5 by the separate receiver. In this connection it is to be understood that step 111 very well may be realized in another location in the transmission process such that the confirmation can effect the transmission of the required software for the processing from either the sender or receiver before the decision in step 107 concerning the processing is made. The processing which takes place in step 109 can be user-specific or application-specific, i.e. the file is processed user-specifically for one or more users or receivers or application-specifically for two or more users, such that the file is subjected to the same processing for one and the same application or one and the same application is implemented at more than one user. The processing will as a rule take place by packet switching, e.g. be executed on packets which comprises image information and it is, of course, then evident that not all packets in the file need to be decoded before the processing. A typical example of processing which is performed can be the processing of image

information with the intention of providing the image information with an optimum colour profile for the relevant user's applications. An example of a colour profile of this kind is the so-called ICC standard which stands for International Color Consortium which was established in 1993 by 8 industrial enterprises in order to provide a standardized architecture and standardized components for colour handling in image information. Digitalized colour image data will both before and after the compression coding typically be present as an RGB code. After image information has been decoded for processing, the RGB format is converted to a CMYK colour format with the use of the ICC colour profile. For the sake of that, this could also be done on the sender's computer 2, but preferably step 109 is realized as shown on the server's computer 6. In this connection the ICC profile can be transmitted automatically to the server 5, e.g. from the sender 1 or from a receiver 8, but may also be prestored in the server. The ICC profile is in any case implemented in each case when the image information format after the decoding is converted from the RGB format to the CMYK colour format.

After completed processing in the server 5 the file is again compression coded in step 110 and a confirmation is submitted as mentioned above in step 111 in the form of a message to the sender and a confirmation in the form of a message to the receiver 8. Whether the confirmation of the receiver in step 111 as mentioned is submitted at an early stage in the process or immediately after step 107 or step 110, the server 5 in step 112 will receive a transmission request from one or more receivers 8 and if the server in step 112 does not find such a transmission request for a receiver, an already compression-coded or processed file for the receiver can in step 104 either be stored in the server 5 for later transmission to the receiver or be deleted. If the server 5 in step 112 on the contrary finds that a transmission request from one or more receivers is present, the server 5 transmits the compression-coded and in case also processed files to the respective receivers 8 on the basis of the receiver addresses, as each packet is addressed and transmitted consecutively after step 107 as the packets are received on the server 5 or consecutively following step 110, in any case on the basis of the received transmission request such this is present at step 112. The transmission from the server 5 to the receiver 8 takes place in step 114 and the file is downloaded consecutively in step 115. In step 116 a decision is made whether the file is downloaded, and if the answer is NO, the downloading of a compression-coded and possibly processed file in step 115 continues until the

5 downloading is completed and confirmed in step 116 with YES. Then the receiver 8 in step 117 sends a confirmation in the form of a message to the sender 1 that the file has been downloaded. After the file has been received and downloaded to the receiver's computer, the latter decodes the file in step 118.

10 Advantageously a specific processing also may take place on the receiver's 8 own computer and a decision about a processing of this kind is taken in step 119. If the answer is YES, the downloaded file is processed in step 120 and it is default that the processing can comprise a number of separate processing steps and be executed on different data types. Where the user or receiver 8 represents media industry or graphic industry, it may of course be topical to implement a suitable colour profile in connection with conversion from one colour format to another. There is also nothing against a file which already has been subjected to a processing on the server 5 in step 109 or after the decoding at the receiver 8 in step 118 being processed further and user-specifically by the receiver 8 in step 120 such this alternative is evident from fig. 2. Further can both the user-specific and application-specific processing wholly take place on the receiver's own computer and without a preceding specific processing in step 109 in the server. This is shown in fig. 3 wherein the answer in step 107 is NO and the loop with the steps 108-110 hence deleted, as specific processing now only takes place in step 120. If the answer in step 119 is NO, the transmission is finally complete and the entire process terminates in step 121 as shown both in fig. 2 and fig. 3.

25 It is also possible that certain forms of processing can be performed in the server 5 on a compression-coded file without a preceding decoding taking place. This alternative will, of course be expressed by a processing condition, but is not shown in fig. 2. In practice this implies that steps 108 and 110 are deleted.

30 Correspondingly can also optionally a specific processing of compression-coded files take place in the receiver 8, without a preceding decoding. This is shown in fig. 4 where processing on the basis of a decision in step 117 a will take place in step 117b, whereafter the file is decoded in step 118 and optionally after a decision in step 119, once again is subjected to a specific processing in step 120.

According to the invention the separate steps in the method are realized consecutively and approximately simultaneously such a step does not need to be terminated before the next has begun, as the separate operational steps in practice are performed by packet-switching. This implies in other words that the first packets in the file already can be downloaded at the receiver 8, while compression coding and packing of the last parts of the files still take place in the sender 1. Further it shall be understood that the succession of the separate steps may be different than shown in the flow chart in fig. 2, which only schematically renders a preferred embodiment. In practice the operational steps can be interfoliated, i.e. that for instance decoding and downloading of not-processed packets in step 115 in time may well precede the processing in step 109. Also the steps for transmission of confirmations between the acting parties, i.e. the sender 1, the server 5 and the receiver 8 can be located differently in the sequence of steps. A confirmation to receiver 8 with resource address, file reference and password can for instance take place already before the transmission starts and then of course from the sender 1 to the receiver 8. Correspondingly the server 5 can confirm the transmission with a message to the sender 1 immediately after in step 107. Yet it is regarded as most suitable that the confirmations are given in the form of messages from the server to respectively sender and receiver after a possible processing in the server has been terminated. Further, a confirmation in step 111 will usually cause the server 5 to receive a transmission request from the receiver 8 at step 112, but a transmission request may well be entered beforehand on the basis of an already submitted message from the sender 1.

It is, of course, no requirement that the decoding of the file in step 118 takes place consecutively as the file is downloaded. The receiver 8 can choose to download the file without decoding and thereafter store the compression-coded and possibly already processed file on his own computer for a shorter or longer time period with regard to a later application. As the file already is compression-coded the storage will require little space. The decoding of stored file can then take place at a later time and be combined with a possible user-specific or application-specific processing on the receiver's own computer. Neither is it, of course, anything against performing the processing or parts thereof on the stored compression-coded file, i.e. before the decoding takes place, but in most cases the file will be processed in connection with the decoding and then as this takes place, e.g.

for an application requirement which shall be met on a suitable time for the receiver or user after the file has been transmitted or stored on the data-processing device of the user.

The method in file transmission according to the present invention also provides great flexibility with regard to storage and downloading of the required software for e.g. processing. Suitably may as mentioned the software for the compression coding for instance be stored at the server 5 and automatically be downloaded to the sender 1 when the transmission is initialized, but it can of course also be prestored at the sender.

Correspondingly can software for the specific processing be stored at the sender 1 as well as the server 5 and/or the receiver 8 and transmission of software of this kind be implemented automatically when e.g. a decision on processing is taken irrespective of whether it takes place at the sender, server or receiver.

The methods in transmission of files according to the present invention will be well suited for file transmission of text and images on Internet with applications in the media industry in regard. By systematically using the compression procedure based on respectively the applicant's own data compression technology for image information and commonly known loss-free compression procedures for text and fonts, a file transmission with a particular large capacity is obtained while the transmission costs are reduced. The applicant's own data compression technology is many times as effective as e.g. the known standards such as JPEG and MPEG with regard to compression speed, while the quality of the decoded information in regard of e.g. colour rendition and resolution is far better. For instance can large image files in the present method be compressed by more than 98% and transmitted via Internet anywhere in the world without causing an appreciably reduced image quality. The transmission additionally takes place very fast – as a rule the confirmation that a downloading has taken place will appear just as fast as it shall take to write the corresponding data to a common CD-ROM.

As mentioned, the methods according to the present invention shall be particularly well suited in the media industry. As more and more tasks in the media industry apply digitally-based information, this requires an effective file transmission. Simultaneously the files can in connection with the transmission be subjected to a specific processing and this processing shall,

regardless of where it takes place, similar to other procedures during the transmission substantially take place in transparency both to sender and receiver. In the present method the demand for lines with high bandwidth is eliminated by far, as the specific processing does not affect the bandwidth requirement in the transmission, and owing to the use of e.g. the above-stated compression factor, it will be possible to obtain a virtual processing rate of the magnitude 10 Gbit/h on an ordinary ISDN line. If a transmission line with the fixed band-width of 2Mbit/s is used, it will with the method according to the present invention and under the same conditions be achieved a virtual transmission capacity of 360 Gbit/h even though the file in the transmission is subjected to a specific non-transmission-related processing. The virtual transmission capacity for a given line is in other words only dependent on the compression factor, but implies for the receiver or user when the transmission takes place with a compression factor of 50 which is very far from an upper limit of the applicant's own data compression technology, an essential improvement of the performance even when it is compared with the up to now used methods on Internet for data transmission without specific processing.

Finally it is to be understood that the herein disclosed methods according to the invention shall not be incompatible with the corresponding specific processing in the sender according to predetermined criteria. The processing will then take place before the compression coding in step 102, and in the division in packets will not only the data type be taken in regard, but also the possible specific processing. A specific processing of this kind at the sender side will, however, as a rule be inexpedient due to the capacity requirements, but will according to the circumstances have no consequences for the other transmission and processing procedures as used in the methods according to the present invention.

PATENT CLAIMS

1. A method in the transmission in a data communications network, particularly Internet, of arbitrarily formatted files comprising one or more different data types, between a sender comprising a data-processing device
5 connected to the data communications network, wherein the sender represents an information provider, and one or more receivers with respective data-processing devices connected with the data communications network, wherein each receiver represents a user, wherein a dedicated server provided in or assigned to the data communications network is used with the method,
10 wherein files which shall be transmitted are stored in a database at the sender or in a database accessible from the sender and which for the transmission that substantially takes place transparently for both sender and receiver, are downloaded to the data-processing device of the sender, and wherein the method is characterized by processing a file specifically for one or more
15 users and/or one or more applications under determined conditions, the specific processing taking place consecutively in the server during the transmission and/or consecutively in the receiver's data-processing device as the file is received and/or in the receiver's data-processing device after the file has been received, and performing the processing with software which is
20 stored in one or more of the following: the sender, the server or the receiver, and as required is transmitted before or in phase with the processing to a an actual processing location.
2. A method according to claim 1,
characterized by comprising consecutive or approximately simultaneous
25 and/or or interfoliated realized steps for
- a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression procedure,
 - b) dividing the compression-coded file in packets,
 - 30 c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
 - d) providing the packets with receiver address, and
 - e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, as well as a further step, for
 - 35 f) decoding the received file at the receiver according to the data

compression procedure or procedures already used for the compression coding.

3. A method in transmission in a data communications network, particularly Internet, of arbitrarily formatted files comprising one or more different data types, between a sender comprising a data-processing device connected to the data communications network, wherein the sender represents an information provider, and one or more receivers with respective data-processing devices connected with the data communications network, wherein each receiver represents a user, wherein a dedicated server provided in or assigned to the data communications network is used with the method, wherein files which shall be transmitted are stored in a database at the sender or in a database accessible from the sender and which for the transmission that substantially takes place transparently for both sender and receiver, are downloaded to the data-processing device of the sender, and wherein the method is
- characterized by comprising consecutive or approximately simultaneous and/or interfoliated realized steps for
- a) compression-coding the file which shall be transmitted with a proprietary data compression procedure or a general loss-free data compression procedure,
 - b) dividing the compression-coded file in packets,
 - c) transmitting the packet-divided compression-coded file to the dedicated server together with receiver addresses,
 - d) providing the packets with receiver address, and
 - e) transmitting the compression-coded file to one or more receivers according to the receiver addresses of the packets, and as well as further steps for
 - f) decoding the received file at the receiver according to the data compression procedure or procedures already used for the compression coding and additionally processing the files specifically for one or more uses and/or for one or more applications under determined conditions, the specific processing taking place consecutively in the server during the transmission and/or consecutively in the receiver's data-processing device as the file is received and/or in the receiver's data processing-device after the file has been received, and performing the processing with software which is stored in one or more of the following: the sender, the server or the receiver and which as required is transmitted before or in phase with the processing to an actual processing location.

4. A method according to claim 3,
characterized by the sender simultaneously with the initialization of the
transmission of during or after the transmission to the server sending a
message to the receiver with a resource address and an access code and
5 receiving a confirmation from the server when the latter has received the file
and the confirmation from the receiver when the latter has received the file
and downloaded it to its data-processing device.

5. A method according to claim 3, wherein the arbitrarily formatted file
comprises one or more of the following data types, viz. image data,
10 alphanumeric data, graphic data and fonts,
characterized by using the proprietary data compression procedure for
compressing image data, and by using the general loss-free compression
procedure substantially for compression of alphanumeric data, graphics data
and fonts.

15 6. A method according to claim 3,
characterized by storing software for data compression coding and decoding
in the server and downloading said software automatically respectively to the
data-processing device of the sender for coding the file when the
transmission is initialized and to the data-processing device of the receiver
20 for decoding the file when it is received.

7. A method according to claim 3,
characterized by the packet division taking place dependent on the data type,
such that each packet comprises a determined data type.

8. A method according to claim 3,
25 characterized by the specific processing taking place in the server after a
preceding decoding of the file in the server by means of the software for the
data compression coding, the software for the processing either being stored
at the sender and/or at the receiver and being transmitted to the
data-processing device of the server when the processing shall take place, or
30 beforehand stored in the data-processing device of the server, and after the
specific processing again compression-coding the file with software stored in
the server for transmission to the receiver, the server on the basis of the
receiver address checking whether processing conditions are present.

9. A method according to claim 8, characterized by the processing conditions assigned to a determined receiver address being stored in the server together with software for the processing and being accessed by the server on the basis of the receiver address.

5 10. A method according to claim 8, characterized by performing the specific processing on one or more determined data types such that only packets comprising the determined data type are decoded before the processing and coded anew after the processing has terminated.

10 11. A method according to claim 3, characterized by the decoding of the file at the receiver taking place consecutively as the file is received.

12. A method according to claim 11, characterized by the specific processing taking place consecutively in the
15 data-processing device of the receiver before and/or after the coding of the file which is received, the software for the processing either being stored at the receiver and/or in the sender and/or in the server and being transmitted to the data-processing device or the receiver when processing shall take place or before beforehand being stored in the data-processing device of the receiver.

20 13. A method according to claim 3, characterized by storing the file as it is received in the data-processing device or receiver, and then decoding the file by the receiver at a later suitably selected time.

14. A method according to claim 13,
25 characterized by the specific processing of the stored file taking place in the data-processing device of the receiver before and/or after the decoding of the file, the software for the processing either being stored at the sender and/or in the server and transmitted to the data-processing device of the receiver when processing shall take place or beforehand entered in the
30 data-processing device of the receiver.

15. A method according to claim 3, characterized by the dedicated server being implemented on a general network server at the sender.

16. A method according to claim 3, characterized in that user names, receiver addresses, files and the given processing conditions assigned to user names or receiver addresses temporarily or permanently are stored in a database provided in the server.

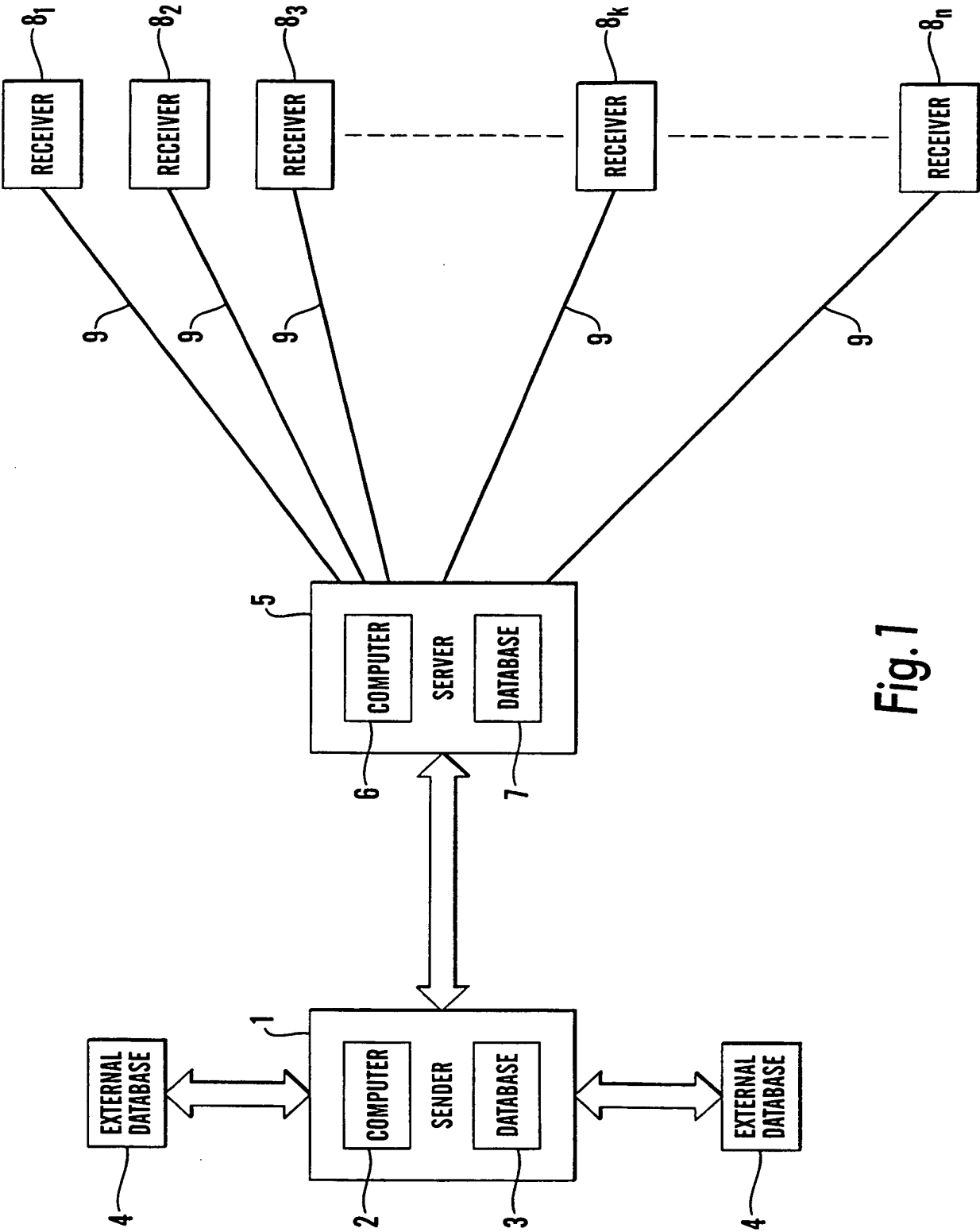
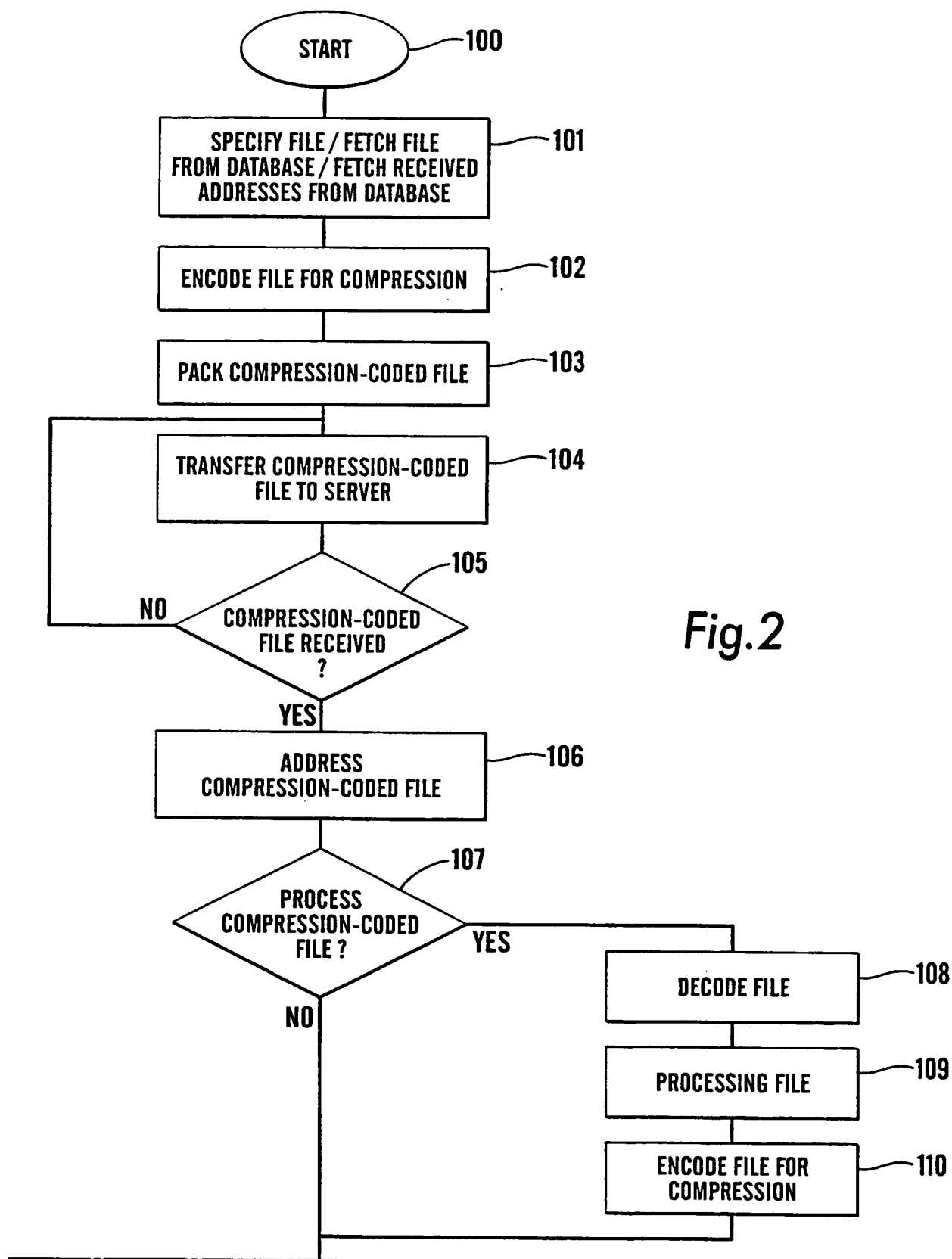


Fig.1

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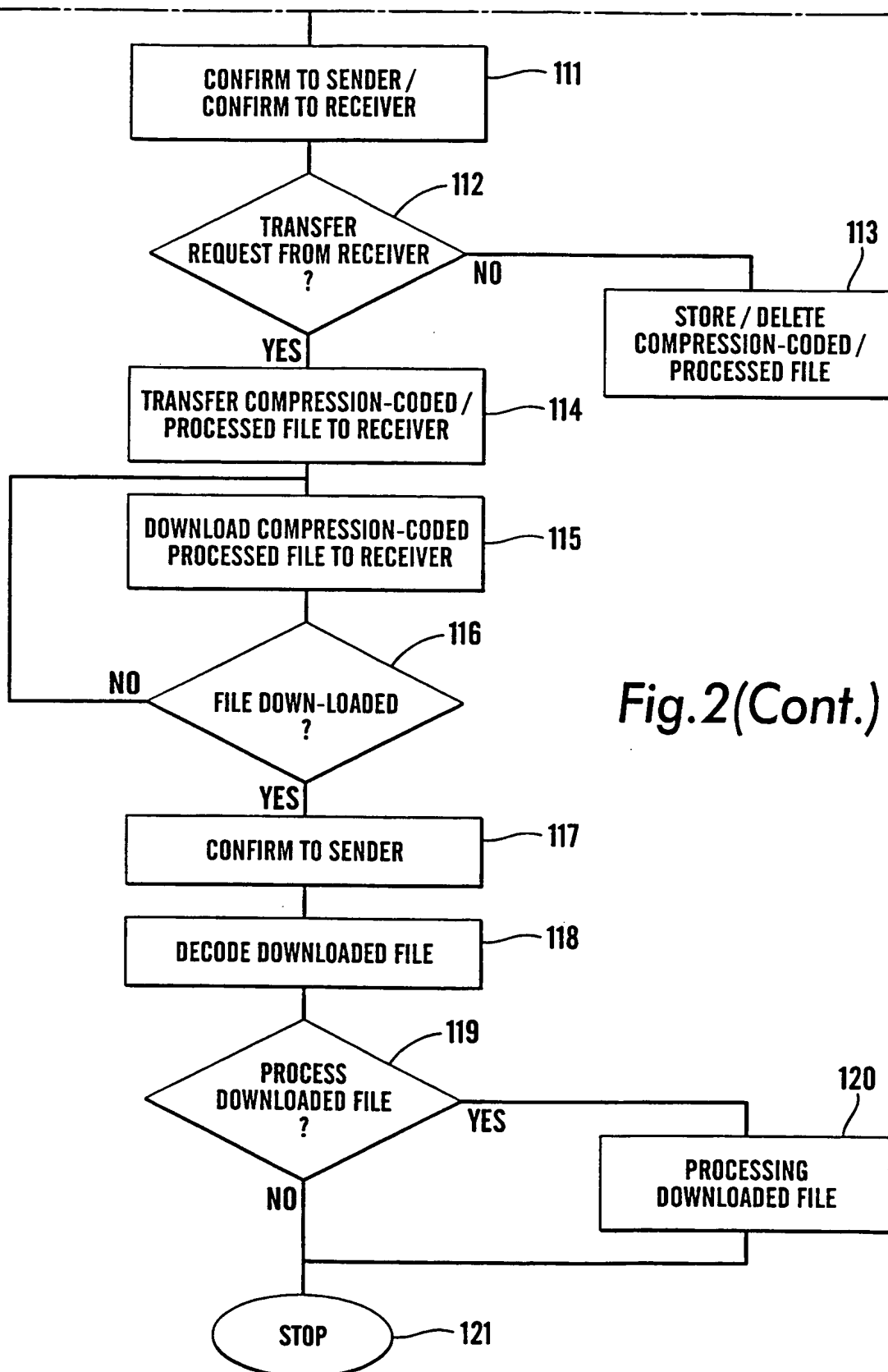


Fig.2(Cont.)

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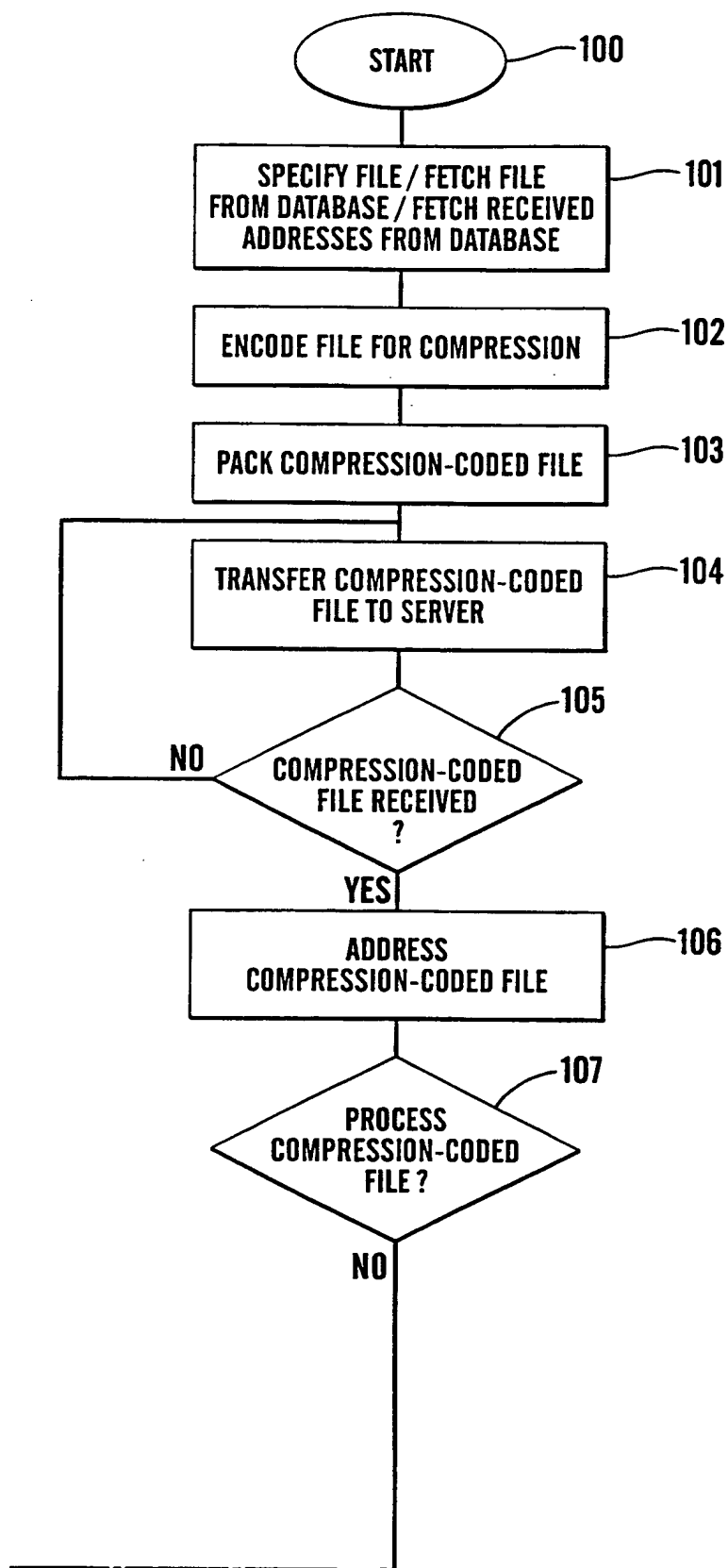


Fig.3

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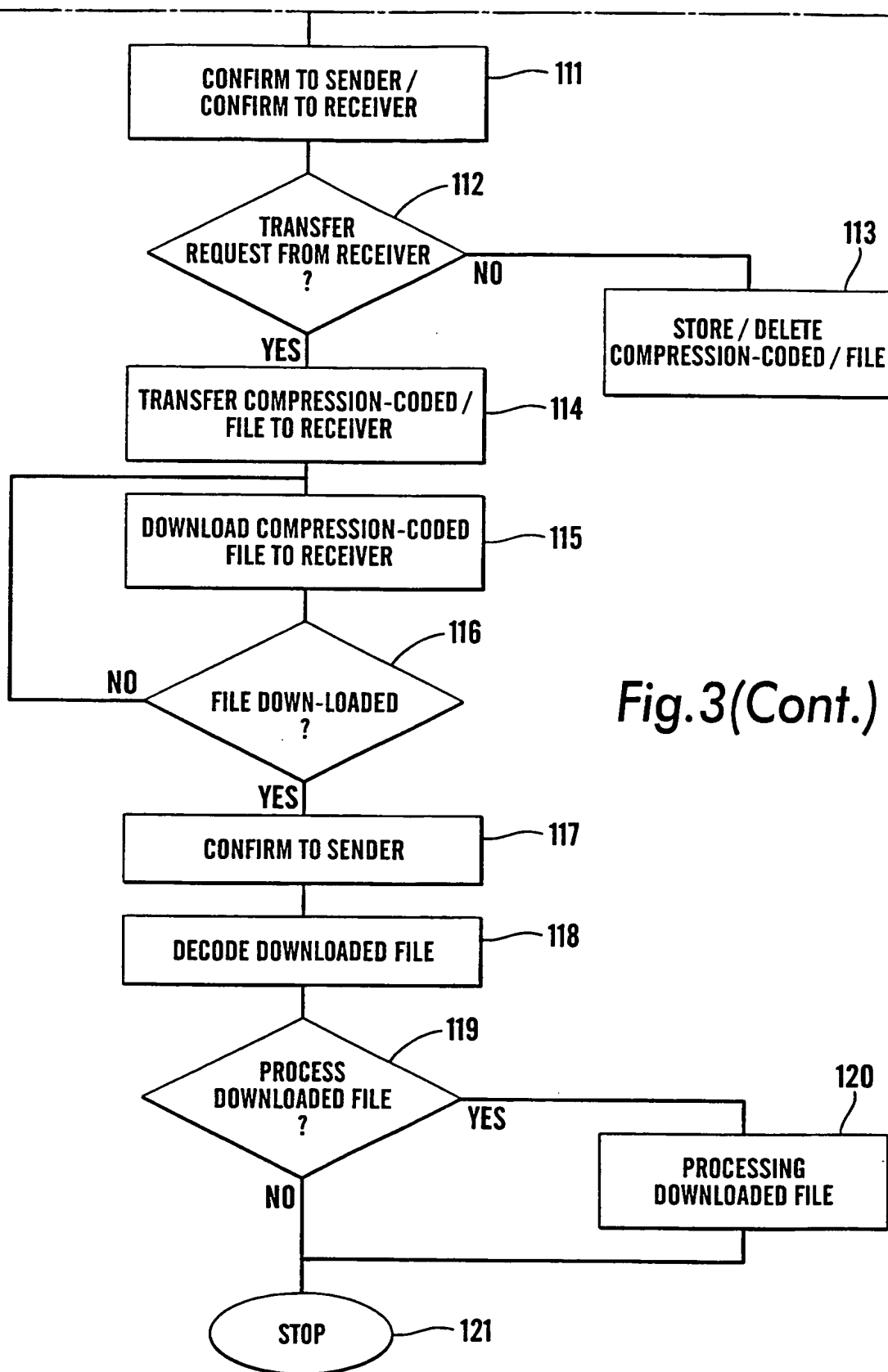


Fig.3(Cont.)

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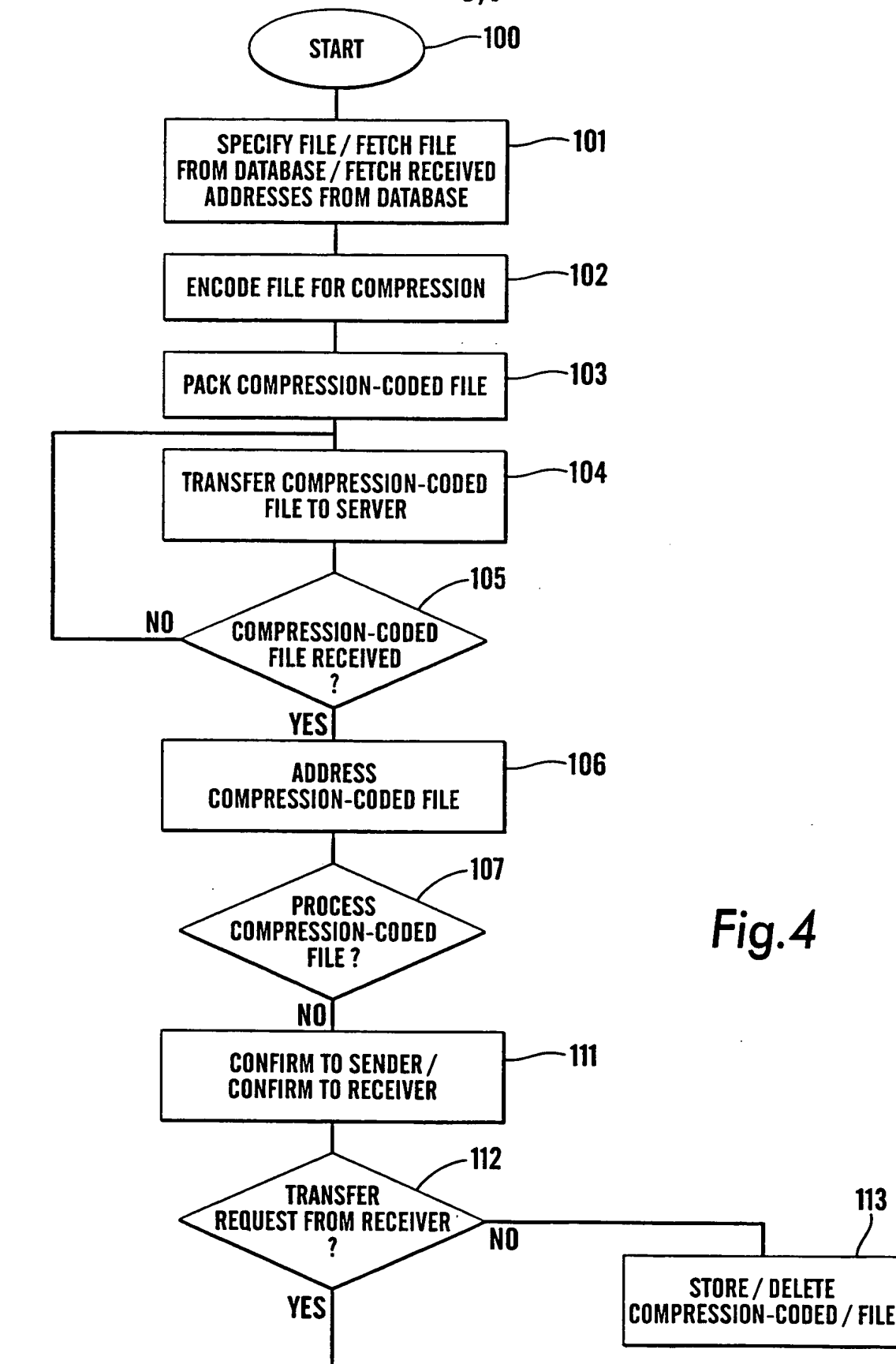
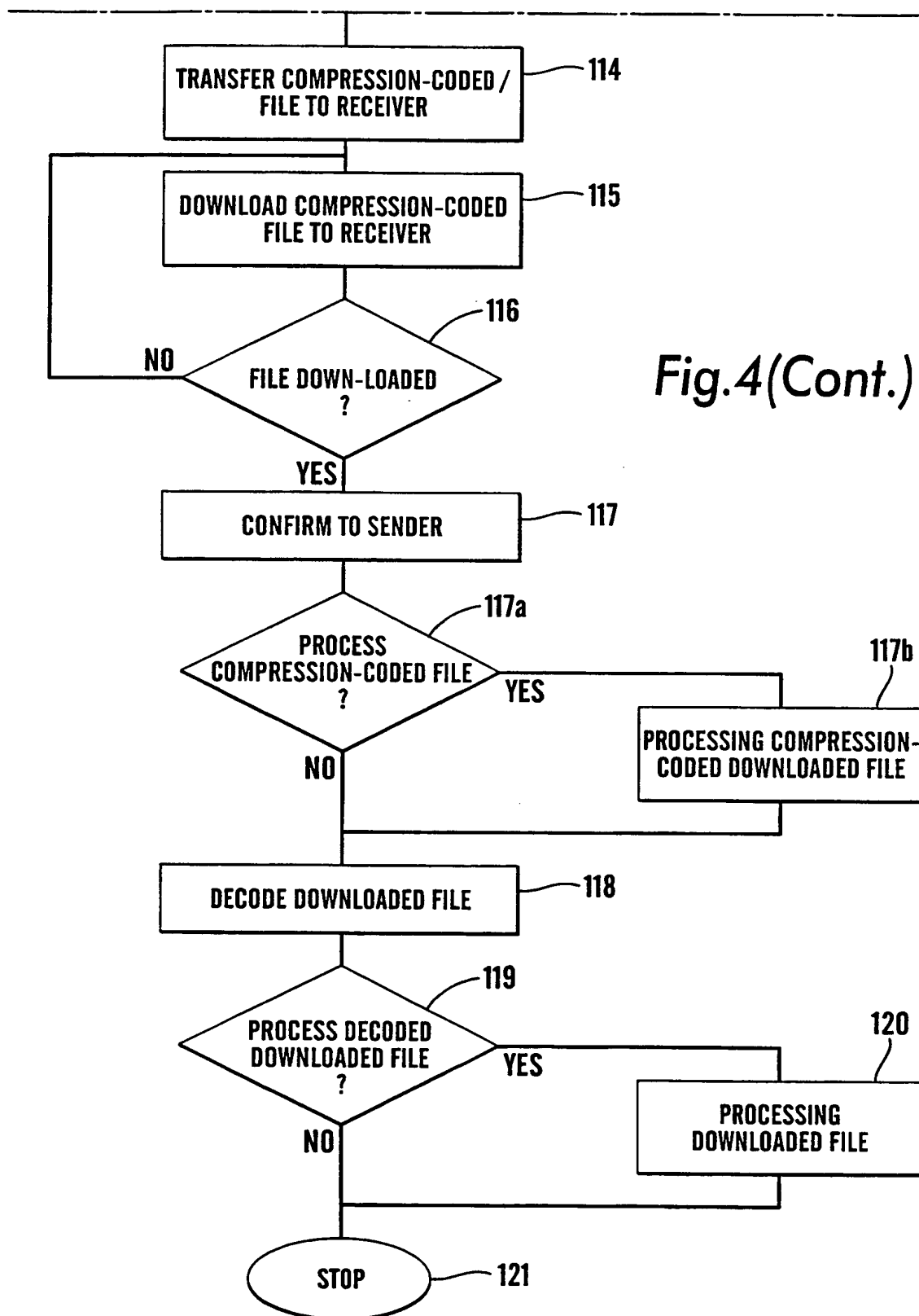


Fig.4

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 00/00098

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 13/00, G06F 9/445, H04L 29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9844402 A1 (BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY), 8 October 1998 (08.10.98), page 2, line 23 - line 30; page 8, line 16 - page 11, line 2 --	1-16
X	Macweek, Volume 8, No N2, January 1994, Fraase M., "Compression pros deliver telecom with sitcom 1.0", page 43 - page 44, See whole document --	1
A	US 5270805 A (SHINTARO ABE ET AL.), 14 December 1993 (14.12.93), See whole document --	1-16

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT
Information on patent family members

02/12/99

International application No.
PCT/NO 00/00098

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